***Technology Education ENrichment* Initiative (TEEN)**

Proposed by Hong Kong Technology Education Association (HKTEA)

Duration: Feb 2013 to Aug 2015

Executive Summary

The Technology Education ENrichment Initiative (TEEN) aims at enhancing the learning & teaching in Technology Education (TE) of Hong Kong secondary schools through the development and dissemination of a technology learning activities (TLAs) exemplars & resource bank that is comprised of experienced TE teachers' expertise in planning and delivering learning experiences and their assessment for learning (AfL) practices. Also it aims at facilitating the exchange of professional experiences between TE teachers through seminars, workshops and exchange programme with TE teachers in Mainland China and to propose the structure, elements of core competence and requirement of a new teacher Professional Development (PD) course based on the outcome of the above

The Task Force on Economic Challenges put forward Six Economic Areas that are vital to the future development of Hong Kong. HKTEA is of the view that TE can serve in the areas of *"Innovation and Technology"* and *"Cultural and Creative Industries"* by enhancing the elements of innovation, technology, cultural and creativity in school education. In order to nurture creativity and innovative thinking, learning in TE is inquiry-based and integrative to link with the learning with other subjects (including Science, Mathematics, and Engineering). Therefore this project supports the supposition that when a teacher has a better command of pedagogical content knowledge (PCK) and assessment for learning (AfL) in TE, students' learning will be enhanced.

The TEEN project will conduct school visits to 5 partner schools and 10 participating schools to identify and cumulate good practices and expertise in TE teaching. The activities include: (1) 40 school-based curriculum development meetings and try-out lessons of the TLAs in the 5 partner schools; (2) 20 school visits to 10 participating schools; and (3) 5 demonstration lessons offered by the partners schools to share experiences with the participating schools;

By studying the PCK and AfL practices of able TE teachers in 5 partner schools, a technology learning activities (TLAs) exemplar and resources bank that includes 20 TLAs will be compiled, published and disseminated to all HK schools offering TE, with a view to facilitate teachers to become less dependent on textbooks in the market. Besides, by adopting the TLAs in exemplar and resources bank, the element of innovation, technology, cultural and creativity in school as well as students' technological literacy will be enhanced. The TLAs will be disseminated in 2 phases, i.e. August 2014 and June 2015. Along with the seminar and workshops promoting the exemplar bank and an exchange programme with TE teachers in Mainland China, the interflow of professional experiences among TE teachers will be facilitated. On basis on the outcome of the above activities, the structure, elements of core competence and requirement of a new TE teacher professional development course will be proposed.

TEEN is seeking HK$1.95M as the funding for the expense of staff and operation costs to implement the above listed programmes for a period of 2 years.

TEEN will be evaluated by (1) the number of schools that will use the TLAs included in the exemplar and resources bank; (2) partner schools and participating schools teachers' opinions on the effectiveness of the SBCD and try-out activities, and the TLAs developed; (3) partner schools and participating schools teachers' opinions on the extent of the elements of innovation, technology, cultural and creativity being enhanced in the TE curriculum; and (4) the survey on students' learning attainment to reflect the effectiveness of the deliverables in enhancing students' learning.

Technology Education ENrichment Initiative (TEEN)
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Aims of Technology Education ENrichment Initiative (TEEN) Project

1. To enhance the learning and teaching in creative, design and technology education through the cumulating and conceptualizing of experienced TE teachers' expertise in planning and delivering learning experiences and their ass essment for learning (AfL) practices, and the school-based curriculum development and evaluation activities in 5 partner schools.
2. To publish a technology learning activities (TLAs) exemplar and resources bank from the outcome of the above, which will be disseminated to all HK schools offering TE esp. DT subjects. By adopting the TLAs in exemplar and resources bank, the element of innovation, technology, cultural and creative in school as well as students' creativity & technological literacy will be enhanced. The exemplar and resources bank will be published in 2 phases, i.e. August 2014 and July 2015 in printed format, CD version and e-book version.
3. To facilitate the exchange of professional experiences between TE teachers through seminars, workshops and exchange programme with TE teachers in Mainland China.
4. To propose the structure, elements of core competence and requirement of a new teacher Professional Development (PD) course.

Background and Needs

The Task Force on Economic Challenges commissioned by the Chief Executive of HKSAR put forward Six Economic Areas that are vital to the future development of Hong Kong. HKTEA is of the view that TE can serve in the areas of *"Innovation and Technology"* and *"Cultural and Creative Industries"* by enhancing the element of innovation and technology and cultural and creative elements in school education. The TEKLA Curriculum Framework published in 2002 provides the curriculum reference to realize this direction.

The goal of TEKLA is to develop students' technological literacy to face the challenges of the future. Therefore, in order to nurture students' creativity and innovative thinking as well as capabilities to live and excel in the highly technological world, it is recommended in the TEKLA Curriculum Framework that teachers offer technology learning activities (TLAs; CDC, 2000 & 2002) to students. In this light, TLAs are by nature inquiry-based learning (IBL) that require specific pedagogy and learning activities to develop in students the essential capability, understaning and awareness to cope with the challenges of the future ingeniously.

However, from a researches into the implementation of the "Hands-on Robotics" Course in the TE subject of 3 secondary schools (Wan, 2009), it is observed that TE teachers' pedagogy and subject knowledge are diversifying so that the learning experiences offered in these schools were diversifying rather than common as originally expected. Moreover, in the Symposium of the *Creativity and Design Education Fair* organized by the Technology Education Section of the Curriculum Development Institute in November 2011, Miss Grace Lau, Vice Chairperson of the Hong Kong Designers Association shared her concerns on the effectiveness of the TE learning experiences in promoting students' creativity as revealed from the findings in her collaboration with a group of TE teachers.

On the other hand, in reflecting the multi-facet nature of technology, it is suggested in the TEKLA Curriculum Framework that teachers need to integrate the learning elements of TE with those of other subjects including Science, Mathematics, and Engineering etc (CDC, 2000 & 2002). While current TE textbooks can provide input of TE concepts and knowledge, they cannot provide guidelines for teachers to plan broad and balanced, school-

specific TE learning activities.

In summary, the above comments denote the needs in enhancing the effectiveness of TLAs in view of developing students' technological literacy to cope with the challenge of the future creatively. Also these imply the importance in enhancing teachers' competence in planning and offering TLAs and their "assessment-for-learning" (AfL) practices in providing specific feedbacks to facilitate students' learning (Sadler, 1998; Black & Wiliam, 1998). Therefore this project is purported to gather the pedagogies and professional knowledge from experienced TE teachers. From these a TLAs exemplar and resources bank will be published to facilitate teachers in the planning of effective and relevant learning activities to students. The exemplar and resource bank will provide sufficient and up-to-date technological knowledge to teachers so that they can be less dependent on textbooks in teaching. A TLAs plan sample is included in the Appendix. It can illustrate how the generic skills of creativity, critical thinking as well as technological understanding and scientific knowledge are developed in students. Introductory seminars and workshops, demonstration lessons in partner schools of the project will be held to develop TE teachers' competence and to facilitate their adaptation of the exemplars in teaching.

Furthermore, as most of the TE teachers specialized in DT will retire in the coming 10 years or so, there is a pressing need to gather and pass on their good practices, expertise and intelligence before their retirement in order to sustain the professional tradition. Therefore, in view of the potential of contribution of TEKLA to the enhancement of cultural and creative, innovation and technology elements in schools, professional development (PD) courses, both initial and in-service, are in great demand to ensure the stable supply of qualified TE teachers. Therefore, to serve as trailblazer of this development, this project will propose a draft of the framework outlining the purposes and components of these PD courses. After this project, the HKTEA will seek for cooperation with tertiary institutes to offer PD course to train new TE teachers and offer in-service PD programme for existing teachers on basis of this.

Following the implementation of the "General Technology" subject in most of the high-schools in the Mainland China, there is an emerging trend and growing demand on the professional exchange between HK TE teachers and their Mainland counterpart to advance the quality of teaching and to enhance students' learning. Therefore, this project includes an exchange programme component to provide opportunities for both Hong Kong and Mainland China teachers alike to visit each other with the view to broaden exposure, cultivate further understanding and to encourage and facilitate professional knowledge interflow. In the same accord, professional exchanges among HK TE teachers will be facilitated by the seminars and demonstration lessons mentioned above.

<u>Theories Underpinning</u>

This project supports the supposition that when a teacher has a better command of pedagogical content knowledge (PCK; Shulman, 1987) and assessment for learning (AfL) practices in offering TLAs, students' learning will be enhanced (Moreland, 2003).

In order to enhance the element of innovation, technology, cultural and creative elements in school education, the learning in TLAs should:

- adopt the conception of technology in broader sense;
- nurture the development of creativity in students with "wicked task" (Kimbell and Perry, 2001);
- be value-added tasks through designing;
- be user's needs oriented (understanding in values and cultures); and
- link with the learning experiences of other key learning areas (e.g. Science, Mathematics and Engineering etc.).

Learning in TLAs usually is usually "task-centred activity" to cater individualized learning styles (ibid.) that stretches across several lessons. Therefore, a robust PCK in TE that will enable the teacher to blend the TE specific content knowledge and pedagogies in order to support students' complex learning in a coherent and connected way. Also teachers with effective PCK can undertake valuable AfL practices to support students' learning by providing specific and timely feedbacks (Assessment Reform Group, 1999). They will be more able to reflect on students' learning and to provide relevant and specific feedback to inform students how well they have done and are doing, and what they might do next (Moreland, 2003).

But it is always a challenge to make explicit the individualized and tacit PCK and AfL practices of good teachers. Through the gathering and conceptualizing of the learning experiences they provide to students as well as their practices in facilitating students' learning, this project is purported to externalize the professional wisdom of TE teachers and compile those into discernable exemplars.

Beneficiary

- 5 partner schools will be benefited from the school-based curriculum development support provided by the project team.
- 10 participating schools will be benefited from the professional support during school visits and classroom observations as well as the demonstration lessons in the partner schools.
- 250 secondary schools (2009 figure) which offer TE subject mainly D&T will be benefited by adopting the TLAs in the exemplars and resource bank. Thus the element of innovation, technology, cultural & creative in school as well as students' creativity & technological literacy will be enhanced. About 300 teachers and 37500 students (250 schools X 150 students) will be involved.
- 20 Hong Kong and 20 Mainland China TE teachers will be benefited from the exchange programme of this project.

Scope

The project will be implemented with the person-power of 1 Project Manager (i.e. a seconded teacher nominated by HKTEA. In case NO teacher is available for secondment, HKTEA will recruit candidate with equivalent qualification to fill the post of Project Manager and / or Assistant Project Managers, 1 project coordinator, 1 research assistant and 1 teaching assistant to

- conduct school visits to the partners schools and participating schools to identify and cumulate good practices and expertise in TE teaching;
- provide school-based curriculum development support to the 5 partner schools with 15 visits in total;
- support the try-out and refinement of the TLAs exemplars developed by working with 5 partner schools with 25 related visits in total;
- support the partners schools in preparing demonstration lessons to share experiences with the participating schools with 5 visits in total;
- conceptualize and analyze existing practices to edify the professional knowledge base in TE teaching;
- facilitate HK TE teachers to exchange and communicate with counterparts in Mainland China by means of school visits and seminars in Hong Kong and Mainland China in two exchange programmes;
- publish TLAs exemplars and resources bank in 2 phases, i.e. August 2014 and July 2015. A total of 5 TLAs developed with the partners schools will be published in the first phase, whilst the final version of

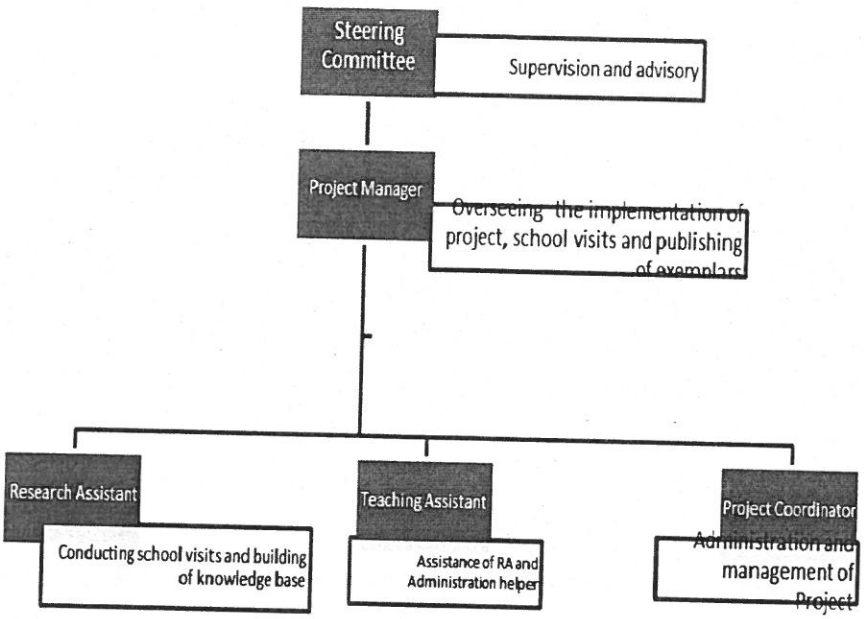
the TLAs Exemplar and Resources Bank will include another 15 TLAs;

- organize 2 seminar and 1 workshop (1 seminar in August 2014 and 1 seminar and 1 workshop in June 2015) to facilitate teachers to implement the TLAs included in the exemplar and resources bank, and
- propose the structure, elements of core competence and requirement for TE teacher professional development course (initial and in-service).

How the TLAs will be recorded

The TLA plan included in the Appendix section will serve as a basis to record expert TE teachers' experiences and knowledge. It would also be used as a framework to present the exemplars in a perceivable and readily adaptable way.

Organization Structure of TEEN



The Steering Committee sets out the strategic direction and provides advice for the implementation of the project. It reviews the work of all staff headed by the Project Manager and makes sure the activities in this project will not overlap the support focuses in Computer and Business subjects of the School-based Curriculum Development (Secondary) Section.

The Steering Committee will be composed of representatives from the Hong Kong Technology Education Association (HKTEA) and collaborators including Faculty of Engineering, the Chinese University of Hong Kong, invited scholars and academics, and renowned figures in the Hong Kong TE community.

Job Specifications of project team:

- The Project Manager will
  - oversee the implementation of the project and management of the project staff;
  - report the progress of the project to the Steering Committee;
  - control the finance of the project;
  - liaise and communicate with the Mainland China teachers in organizing the exchange programme;
  - support partners schools in school-based curriculum development and preparation of open-house session;
  - serve as the chief editor and publisher of the TLAs exemplar and resources bank;
  - provide TE subject knowledge support and data collecting strategies to staff in conducting school visit, classroom observation, school-based curriculum development and preparation of open-house session; and
  - draft the proposal of the TE teacher PD course (initial and in-service).
  - organizing TLAs exemplar and resources bank seminars and workshop for TE teachers.
- The Research Assistant will normally
  - develop school visits and classroom observation framework and procedures with the Project Manager;
  - conduct school visits and classroom observations;
  - organize, analyze and conceptualize the data collected from the visits and the try out in the partner

schools;

- develop the professional knowledge base in TE teaching and assist the Project Manager in compiling the TLAs exemplar and resources bank;
- be responsible in writing up of the TLAs exemplar and resources bank; and
- assist the organization of seminars and workshop.

➢ The Project Coordinator will normally

- assist the Project Manager in administrative, financial and logistics aspects of the project;
- oversee the operation of the project;
- maintain the expense and revenue ledgers;
- organize the exchange programme with Mainland China TE teachers;
- assist in the editing and publishing of the TLAs exemplar and resources bank; and
- assist the organization of seminars and workshop.

➢ The Teaching Assistant will normally

- provide administrative support to the Project Coordinator;
- assist the Research Assistant in carrying out data collection, organization and analysis;
- assist Project Manager in the compiling of the TLAs exemplar and resources bank; and
- assist the Project Manager in organizing seminars and workshop.

Implementation Plan:

(i) Duration: Feb 2013 to Aug 2015

(ii) Process / Schedule:

- School-based curriculum Development in partner schools (Sept 2013 to June 2014)
- Try-out of TLAs developed in partner schools (Jan 2014 to March 2015)
- Data collection in partner schools and participant schools (Nov 2013 to Oct 2014)
- Publication of Phase 1 TLAs exemplar and resource bank and introductory seminar. (Aug 2013)
- Exchange programme with Mainland teachers Part 1 (July 2014)
- Demonstration lessons in which participating schools visit partner schools. Each partner school will host one session and in total 5 sessions will be held in this project. (Nov 2014 to March 2015)
- Exchange programme with Mainland teachers Part 2 (April 2015)
- Publication of final version of TLAs and Introductory seminar and workshop (June to July 2015)
- Publication of Technology Education professional development course. (May 2015)

(iii) SBCD schedule for partners schools

For each partner school, the project team will visit 3 times in two phases to support the SBCD process (Sept 2013 to Sept 2014). In each phase, 1 TLA will be developed. SBCD related events include:

- introductory meeting to build up rapport and identify possible ideas (Sept to Dec 2013)
- development meetings to planning and prepare the TLAs to be try-out (Oct 2013 to Jan 2014 and Aug to Oct 2014)
- A total of 15 SBCD events will be conducted in the project.

(iv) Try-out schedule for partner schools

- For each partner school, the project team will visit 5 times in the two phases to support the try-out process (Jan 2014 to March 2015).
- In each phase, 1 TLA will be try-out with 1 lessons observations and 1 post-observation meetings will be held to gather information on the effectiveness of the TLAs and to identify areas for further improvement (Feb 2014 to June 2014 and Nov 2014 to March 2015)
- 1 evaluation meeting to reflect on the TLAs development process. (May 2015)
- A total of 25 try-out related events will be conducted in the project.

(v) School visits schedule for participating schools

- For each participating school will be visited by the project team twice. These may be in the form of either interview or lesson observation.
- A total of 20 school visits will be conducted in the participating schools.

Event	Time	Remark
Preparation and recruit Staff	Feb to Aug 2013	Substitute teachers are to be recruited before the start of 2013-14 school year
School-based Curriculum Development support in 5 partner schools: teachers' meeting, reviewing curriculum, development of TLAs.	Sept 2013 to Oct 2014	
Try-out of School-based -eveloped TLAs in partners schools	Jan 2014 to March 2015	
Data Collection: school visits and classroom observations in 5 partners and 10 participant schools	Nov 2013 to May 2015	5 participant schools will be visited in 2013-13 school year and another 10 in 2014-14
Signing of MOU with Mainland TE body about exchange programme	April 2014	Proposed collaborator: Nan Jing Normal University, PRC
Preparation of exchange programme Part 1	Dec 2013 to May 2014	
Try-out of TLAs exemplars in 5 partner schools	Feb 2014 to Feb 2015	
Exchange programme with Mainland Part 1: Hong Kong TE teachers & students visiting Mainland China	July 2014	20 HK teachers will participate.
Publication and introduction of first 5 TLAs Exemplars of Phase 1	Aug 2014	
Organizing TE 1 professional development seminar in implementing the TLAs	Aug 2014	
Evaluation of the try-out of TLAs in partner schools to inform the development of the final version of the exemplar and resources bank.	March 2015 to May 2015	
Preparation of exchange programme Part 2	Nov 2014 to April 2015	
Exchange programme with Mainland Part 2: Mainland China TE teachers & students visiting Hong Kong	April 2015	20 Mainland China teachers will participate
Publication and launching of Final version of the TLAs exemplar and resource bank that include another 15 TLAs.	July 2015	The exemplar and resources bank includes 15 newly developed TLAs
Organizing TE 1 professional development seminar and workshop in implementing the TLAs	June 2015 to July 2015	
Publication of TE PD Course Proposal.	Aug 2015	HKTEA will seek for cooperation with tertiary institutes to offer the course to train TE teachers after the project

(vi) Project Timeline

Collaboration with other parties / partners

- The Faculty of Engineering, the Chinese University of Hong Kong will serve as:
  - adviser to the implementation of the project by sending representative(s) to the Steering Committee
  - adviser on technological expert knowledge involved in TLAs. Project team will invite feedback from the CUHK on the TLAs developed.
- The 5 partners schools will
  - participate in the school-based curriculum development activities including TLAs development meeting, lesson observations, trial implementation of TLAs, and debriefings and evaluations. A total of 8 visits are scheduled for each partner schools.
  - present in the seminars and workshops organized by the TEEN project team to facilitate professional exchange. Each partner school is required to present in at least 1 seminar or workshop.
  - host the 1 demonstration lesson during the schools visit by participating schools teachers
  - be the host to receive school visit by the Mainland China teachers.
- The 10 participant schools will
  - be visited by the TEEN project team twice to gather data to establish the TE professional knowledge base. The process may involve meeting with TE teachers, lesson observations and debriefings.

Products

(i) Deliverables
- School-based curriculum development and try-out of exemplars in 5 partner schools.
- Publication of TLAs exemplars and Resources banks in 2 phases (i.e. Phase 1 in Aug 2014 and final version from June to July 2015) in hard copies, CDROM and e-book versions.
- 2 seminars and 1 workshops (1 seminar in August 2014 and 1 seminar and workshop in July 2015)
- Exchange and collaboration programme with Mainland TE teachers including school visits in Hong Kong and Mainland China.
- A proposal of teacher Professional Development (PD) Course

(ii) Dissemination of deliverables / outcomes:
- Demonstration lessons offered by partner schools
- Distribution of TLAs exemplars and Resources banks to all schools offering TE esp. DT subjects (250 in number);
- Introductory seminar and workshops (1 seminar in August 2014 and 1 seminar and 2 workshops in June 2015) to facilitate other schools to implement the TLAs published.

(iii) Commercialization potential of deliverables / outcomes:
- On basis of the proposal of the professional development courses that will be developed in this project, the HKTEA will offer professional development course to TE teachers. The course fee payable by participants of these courses is the source of funding to sustain the project.
- There are schools that may need supports in implementing the TE curriculum but are lacking of appropriate staff or supports (e.g. primary schools, schools without DT workshop facilities). With the experiences and knowledge gathered in this project, HKTEA can provide school-based curriculum development support services to them and the hire-of-service fee charged can be another source of further funding.

- HKTEA will seek potential sponsors in "Innovation and Technology" and "Cultural and Creative" industries to fund the further development of the project.

Project evaluation

(i) Performance indicators:

- The number of schools that will use the project deliverables, i.e. the TLAs included in the exemplar and resources bank.
- Partner schools and participating schools teachers' opinions on the effectiveness of the SBCD and try-out activities, and the TLAs developed.
- Partner schools and participating schools teachers' opinions on the extent of the elements of innovation, technology, cultural and creativity enhanced in the TE curriculum.
- The survey on students' learning attainment to reflect the effectiveness of the deliverables in enhancing students' learning.

(ii) Outcome measurements:

- The Steering Committee will supervise the project team to survey on the implementation of the TLAs in partner schools (during the project) and other schools including participant schools (after the project) to provide the number of schools using the TLAs.
- Teachers from partner schools and participating schools will be interviewed after the dissemination of the final version of the TLAs exemplar and resources bank to provide feedbacks on the effectiveness of the SBCD and try-out activities, and the TLAs developed, as well as on the extent of the elements of innovation, technology, cultural and creativity being enhanced in the TE curriculum.
- Teachers and students from partner schools will be interviewed after the try-out activities to obtain information about students' learning attainment in order to evaluate the effectiveness and relevancy of the deliverables in enhancing students' learning.

Budget

		monthly	*MPF*	Amount	
STAFF COST					
Staff Cost (24 Mth)					
Substitute Teacher *	Secondment for Project Manager	23,530.00	1,176.50	$592,956.00	
Teaching Assistant	Administration Helper	9,500.00	475.00	$239,400.00	
Project Coordinator	Administration and Management of Project	14,200.00	710.00	$357,840.00	
Research Assistant	Data collection, transcribing, analysis	17,000.00	850.00	$428,400.00	
Sub-total					$1,618,596.00
Equipment					
	2 Desktop computers			$ 12,000.00	
	2 Printers			$ 2,000.00	
	2 Laptop computers for school visit			$ 16,000.00	
	video shooting equipment (camcorder, tripod, Mic),			$ 10,000.00	
	essential productivity softwares (word-processing, spreadsheet and presentation) for document processing, data analysis, video editing, data storage and back-up			$ 10,000.00	
sub-total					$ 50,000.00
SERVICES					
Publications	TLAs Exemplar and Resources Bank:				
	Compilations, editing, printing, e-book development			$ 45,000.00	
	Printing and disseminating of 500 copies			$ 65,000.00	
	CDROM production and disseminating (500pc X $20 with Case and Cover)			$ 10,000.00	
Sub-total					$120,000.00
Professional services	Proposal of TE Professional Development Course: editing, professional reviews			$ 15,000.00	
Sub-total					$ 15,000.00
GENERAL EXPENSES					
Project operation cost					
	stationary, general and IT consumables	$1250		$ 30,000.00	
	travel allowance for school visits for 3 staff	$500		$ 9,000.00	
	Audit Fee ($15000)			$ 15,000.00	
sub-total					$ 54,000.00

		monthly	*MPF*	Amount	
TLAs seminar and workshops					
	venue fee, printings and materials (tools, teaching kits and consumables (5 events X $3000 each)			$ 15,000.00	
	Traffic allowance and Honorariums for teachers/speakers of workshops seminars events and visits (2 seminars and 3 workshops with 2 speakers each = (2+3) X 2 X $200 = $2000)			$ 2,000.00	
Sub-total					$ 17,000.00
Exchange Programme					
	events cost			$ 10,000.00	
	subsides for HK teachers(20x $3000)			$ 60,000.00	
Sub-total					$ 70,000.00
Contingency	3% of non-salary Budget expenses				$ 9,780.00
Grand Total					**$1,954 ,376.00**
	Total Subsidy from QEF (nearest hundred)				**$1,954 ,400.00**

* In case NO teacher is available for secondment, HKTEA will recruit candidate with equivalent qualification to fill the post of Project Manager and / or Assistant Project Managers and the salary will be paid in compliance with QEF Pricing Standard.

Assets Usage Plan

Category	Item / Description	No. of Units	Total Cost	Proposed Plan for Deployment *(Note)*
audio and video equipment	video shooting equipment (camcorder + tripod + Mic + external),	1 set	10,000	Upon completion of the project, the video shooting equipment will be deployed to my organization for taking videos of lessons of experienced TE teachers in view of sharing of good practices.
computer hardware	Desktop computers	2	12,000	Upon completion of the project, the computer equipment will be deployed to my organization for processing information and videos of good practices of TE teachers. Also these can be used in information processing and the storage of soft version of products of curriculum development activities and teacher professional development programs that will be held by my association.
	Printers	2	2,000	
	Laptop computers for school visit	2	16,000	
computer software	essential productivity softwares (word-processing, spreadsheet and presentation) for document processing, data analysis, video editing, data storage and back-up	4	10,000	Upon completion of the project, the computer software will be deployed to my organization for processing information and videos of good practices of TE teachers. Also these can be used in information processing of curriculum development activities and teacher professional development programs that will be held by my association.

Note: for use by organization in other projects (please provide details of the organization to which the asset will be deployed and the planned usage of the asset in activities upon project completion).

Report Submission Schedule

My organization commits to submit proper reports in strict accordance with the following schedule :

Project Management		**Financial Management**	
Type of Report and covering period	**Report due day**	**Type of Report and covering period**	**Report due day**
Progress Report 1 /2/2013 - 31/7/2013	31/8/2013	Interim Financial Report 1 /2/2013 - 31/7/2013	31/8/2013
Progress Report 1 /8/2013 - 31/1/2014	28/2/2014	Interim Financial Report 1 1/8/2013 - 31/1/2014	28/2/2014
Progress Report 1 /2/2014 - 31/7/2014	31/8/2014	Interim Financial Report 1 /2/2014 - 31/7/2014	31/8/2014
Progress Report 1 /8/2014 - 31/1/2015	28/2/2015	Interim Financial Report 1 /8/2014 - 31/1/2015	28/2/2015
Progress Report 1 /2/2015 - 31/7/2015	31/8/2015	Interim Financial Report 1 /2/2015 - 31/7/2015	31/8/2015
Final Report 1/2/2013 - 31/8/2015	30/11/2015	Final Financial Report 1/2/2013 - 31/8/2015	30/11/2015

-- End of Proposal --

Appendix: Reference

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Appendix: Research & publications of the project leader

"A Curriculum Innovation in Hong Kong Prevocational Schools - a case study of Design and Technology in the sixth form curriculum"- paper co-presented with Lam, C.C.(CUHK) and Koo, Alfred (Uni. of Sydney) at the 13th Conference of Hong Kong Educational Research Association, November, 1996.

"The Design and Technology Education in Hong Kong : Facing the Challenge of 21st Century"- Keynote speech co- presented with Lam, C.C.(CUHK) at The International Conference on Technology Education in the Asia-Pacific Region (ICTE '97), National Taiwan Normal University, Taipei, Taiwan, 23rd -26th April , 1997.

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Appendix:

TLA PROJECT PLAN

SCHOOL: ABC College	LEVEL: ~~P5/P6/S1/S2/S3/S4/S5/S6/S7~~*
TEACHER: Mr. ABC	GROUP SIZE: ☑ 20 INDIVIDUALS
DURATIONS: 6 LESSONS OF 2x35 MINS.	☐ GROUPS OF

AIMS	
The project is to design and make a Mini-light that can be attached to a key ring. The project will enable students to experience the design and manufacture of simple electronic circuits.	
PROJECT BRIEF	
To design and make a mini-light. (Could be formulated by students)	
PROBLEM TO BE SOLVED BEHIND THE PROJECT (e.g. User's Need to be addressed)	
When you return home at night, it can often be difficult to find your lock in the dark to put your key in.	
MATERIAL PROVIDED	**EQUIPMENT/TOOLS/MACHINES INVOLVED**
50mm x 50mm x 6mm Plastazote foam 50mm x 50mm High Impact Polystyrene Two L621 button cells 1 pcs. 3mm Ultrabright LED	Cutter, scissors, punch, vacuum former, electronic testing boards (e.g. MFA), strip heater, double side adhesive tape
CAD SKILLS INVOLVED IN DESIGNING	
2D drawing, extrusion, simple dimensioning, rendering	
DESIGN SKILLS EMPLOYED	**MAKING SKILLS USED**
Formulation of design brief, investigation, evaluation, modification	Cutting out on foam and plastic, vacuum forming, assembling with double side adhesive tape
TECHNOLOGICAL KNOWLEDGE APPLIED IN THE PROJECT**	
Using of CAD, presenting idea through sketches and CAD drawing, basic electronic concept on open/close circuit, LED, resistor and batteries, packaging by vacuum forming	
SOCIAL IMPACT AND INFLUENCE OF CULTURE TO BE DEVELOPED FROM THE PROJECT	
Security is important in our society; people come home late, "Keys" are widely use today. Packaging being one of the marketing techniques today.	
EXPERIMENTS /EXPLORATION TO BE CARRIED OUT	
Research on the habit of using keys; Experiment on simple circuits.	
TEACHING RESOURCES	
http://www.rapidelectronics.co.uk/	
SUGGESTED WEBSITES FOR STUDENTS	
http://www.k-links.net/sjyp.html; http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/world/2003-06/25/content_937608.htm; http://www.batterypub.com/;	

** delete where not applicable*

***could consider the strands in technology education:*
Information & Communication Technology, Materials & Structures, Operations & Manufacturing, Systems & Control, Technology & Living and Scientific Application

ASSESSMENT SCHEME

WEIGHTING	AREA OF ASSESSMENT	DATE FO ASSESSMENT	0-2	2-3	4-6	6-8	8-10
10%	DESIGN SKETCHES	After 3rd lesson					
30%	CAD DRAWING	After 3rd lesson					
20%	RESEARCH	After 1st lesson					
5%	WORKSHEET	After 2nd lesson					
5%	EXERCISES	After 2nd lesson					
-	CHOOSE OF MATERIAL						
-	MODEL						
5%	PROCESS SKILL	After 4th lesson					
-	FINISHING						
10%	PRODUCT	After 5th lesson					
10%	REPORT	After 6th lesson					
5%	PRESENTATION	After 6th lesson					

Note: Different TLAs will have different weighing and areas of assessment. Please decide the appropriate areas of assessment according to the learning focuses that you think are important.

VALUES AND ATTITUDES TO BE DEVELOPED IN THIS TLA	
Perseverance in solving the problem, respecting others' opinion in discussion	
GENERIC SKILLS TO BE DEVELOPED IN THIS TLA *(Please specify in which activities that these Generic Skills are developed.)*	
COMMUNICATION	• Presenting the idea • Discussion • Design ing the package of the mini-light
COLLABORATION	• Discussion of specification with other students*
CRITICAL THINKING	• Using the specifications as criteria to evaluation and peer assessment

AUDIT OF CREATIVITY SPACE SCAFFOLDING IN TLA

(Please put a ✓ in the appropriate box to describe the creativity space you will scaffold.)

Creativity Space	Broad	Neutral	Limited
Needs and Problem	☐	☑	☐
	Students autonomously identify needs and problem	Teacher guides students in identifying needs and problem	Teacher determines the design problem
Design Factors	☐	☐	☑
	Students autonomously identify design factors	Teacher guides in identifying factors to be analyzed	Teacher determines the factors to be considered
Design Solution	☐	☑	☐
	Develop and planned by students	Teacher guides with some possible solutions	Teacher shows the solution to students and requires them to follow
Knowledge and Skills to be learned	☐	☐	☑
	Students determine what knowledge and skills to be learned in order to realize the solution	Teacher provides knowledge and skills	Teacher teaches
Design Cycle	☐	☑	☐
	Students loop back to former stages to redesign according to the need of the situation	Students occasionally modify the solution	Teacher leads the progress of students' activities
Evaluation	☐	☑	☐
	Students autonomously evaluate their solution	Teacher provides directions of evaluation	Teacher evaluates students' solutions

TEACHING SCHEDULE

LESSON _1_OF_6__Introduction and Investigations
DATE:
DURATION:___70____MINS.

OBJECTIVES
1. To introduce the problem and the project.
2. To analyze the problem.
3. To formulate the design brief.
4. To investigate various locks and keys.

ACTIVITIES
1. Discussion on background information.
2. Writing design brief.
3. Discussion on advantages and disadvantages of existing solution.
4. Research on locks and keys.
5. Discussion on the needs of security system today.

SCHEDULE

1.	Ask a std. to unlock a drawer that placed in dark.	5 MINS.
2.	Discuss the problem.	10 MINS.
3.	Propose solution from std.	5 MINS.
4.	Guiding std. to write a design brief.	10 MINS.
5.	Slide show on locks and keys.	5 MINS.
6.	Discussion on locks and keys.	10 MINS.
7.	Fill in the "Mini-Light" project sheet 1.	10 MINS.
8.	Discussion on security measures.	10 MINS.
9.	Summary	5 MINS.

TEACHING SCHEDULE

LESSON _2_OF_6__Components and circuits
DATE:
DURATION:___70____MINS.

OBJECTIVES	1.	To develop concept and knowledge of simple electronics circuits.	
	2.	To recognition and selection of components.	
	3.	To experiment with building electronic circuits.	
ACTIVITIES	1.	Discussion on circuits and symbols.	
	2.	Choosing correct symbols.	
	3.	Building simple electronic circuits.	
	4.	Testing electronic circuits on different configurations.	
SCHEDULE	1.	Ask a std to correctly insert batteries into a toy car. Discuss the polarity and circuits	5 MINS.
	2.	Fill in "Basic Circuit" worksheet.	10 MINS.
	3.	Play with circuit symbol cards.	10 MINS.
	4.	Build simple electronic circuits with MFA.	20 MINS.
	5.	Fill in the "Mini-Light" project sheet 2.	10 MINS.
	6.	Examine behaviors of circuits under different configurations.	10 MINS.
	7.	Summary	5 MINS.

TEACHING SCHEDULE

LESSON _3_OF_6__Design Ideas
DATE:
DURATION:___70____MINS.

OBJECTIVES	1. To familiar with the environment of Pro/DESKTOP.	
	2. To develop skills on 2D drawing by Pro/DESKTOP.	
	3. To know how to extrude an object.	
	4. To design a mini-light with Pro/DESKTOP.	
ACTIVITIES	1. Discussion on specifications.	
	2. Generation of ideas on sketchbook.	
	3. Practicing on using of Pro/DESKTOP.	
	4. Presenting idea by using Pro/DESKTOP.	
SCHEDULE	1. Ask std. to list out the limitations of the mini-light.	5 MINS.
	2. Analyze the effects of the limitations on the design.	10 MINS.
	3. List a specification for the project.	5 MINS.
	4. Sketch ideas on sketchbook.	15 MINS.
	5. Learn Pro/DESKTOP environment.	10 MINS.
	6. Draw 2D objects.	10 MINS.
	7. Extrude a 3D object from 2D's.	10 MINS.
	8. Summary	5 MINS.

TEACHING SCHEDULE

LESSON _4_OF_6__Manufacturing Design
DATE:
DURATION:___70____MINS.

OBJECTIVES	1.	To familiar with the workshop environment.	
	2.	To aware the safety measures.	
	3.	To realize the design.	
	4.	To develop skills on using hand tools.	
	5.	To modify the design.	
ACTIVITIES	1.	Checking the safety level of the workshop.	
	2.	Identifying different hand tools.	
	3.	Making the mini-light.	
	4.	Recording the procedure for manufacturing the mini-light.	
SCHEDULE	1.	Show newspaper cuttings on workshop accident and discuss.	5 MINS.
	2.	Fill in the "Workshop Safety Check List".	10 MINS.
*class will be divided into two groups, one doing 3, the other doing 4.	3.	Demonstrate methods and tools for manufacturing the mini-light.	15 MINS.
	4.	Render the 3D drawing and print it out.	15 MINS.
*modify the design when in need.	5.	Make the mini-light.	20 MINS.
	6.	Summary	5 MINS.

Handouts on basic workshop skills and hand tools will be distributed to the class after the lesson.

Students are requested to write down the manufacturing process as HW assignment.

TEACHING SCHEDULE

LESSON _5_OF_6__Packaging
DATE:
DURATION:___70____MINS.

OBJECTIVES
1. To appreciate the market value of packaging.
2. To design and make a package for the mini-light.
3. To complete the manufacturing of unfinished mini-light.
4. To acquire the techniques of vacuum forming.

ACTIVITIES
1. Appreciation of different packaging examples from the market.
2. Designing a package for the mini-light.
3. Making the package and the mini-light.
4.
5.

SCHEDULE		
1.	Shows different existing packaging from the market and discuss.	15 MINS.
2.	Design a package for the mini-light.	15 MINS.
3.	Demonstrate the techniques of using vacuum former and strip heater.	15 MINS.
4.	Complete the unfinished mini-light and make the package.	20 MINS.
5.	Summary	5 MINS.

Students are asked to design a corporate image for the product mini-light.

TEACHING SCHEDULE

LESSON _6_OF_6__Evaluation
DATE:
DURATION:___70____MINS.

OBJECTIVES	1. To complete all the manufacturing process.	
	2. To test the mini-light.	
	3. To evaluate others' work.	
	4. To self-evaluate their own work.	
	5. To present their idea.	
ACTIVITIES	1. Completing the unfinished mini-light and packages.	
	2. Testing against the product.	
	3. Evaluation on others' work.	
	4. Self-evaluation.	
	5. Presentation.	
SCHEDULE	1. Brief the procedure of testing and evaluation.	5 MINS.
	2. Complete the unfinished mini-light and make the package.	30 MINS.
	3. Test and evaluate others' work. (Students are asked to find 3 others to comment on their work and score it.)	10 MINS.
	4. Present the product by students of having the highest, middle and lowest scores at the evaluation session).	15 MINS.
	5. Brief the requirement of project report.	5 MINS.
	6. Summary	5 MINS.

Project report should be submitted two weeks after the last lesson.
Self-evaluation forms and guidelines on report writing will be distributed before the lesson.