



Final Report of Project

Project No.: 2008 / 0102

Part A

Project Title: Stress Management and Mental Health Promotion for Teachers in Hong Kong

Name of Organization/School: Department of Rehabilitation Sciences, The Hong Kong Polytechnic

University

Project Period: From July 2009 (month/year) to June 2011 (month/year)

Part B

Please read the Guidelines to Completion of Final Report of Quality Education Fund Projects before completing this part of the report.

Please use separate A4-size sheets to provide an overall report with regard to the following aspects:

- 1. Attainment of objectives
- 2. Project impact on learning effectiveness, professional development and school development
- 3. Cost-effectiveness a self-evaluation against clear indicators and measures
- 4. Deliverables and modes of dissemination; responses to dissemination
- 5. Activity list
- 6. Difficulties encountered and solutions adopted

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Signature:		Signature:	
Date:		Date:	

^{*} Final Report of Project prior to the 8^{th} call should be signed by the supervisor of the school/the head of the organization or the one who signed the Quality Education Fund Agreement for allocation of grant on behalf of the organization.

^{*} Final Report of Project under the 8th and subsequent calls should be submitted via "Electronic Project Management System" (EPMS). Once submitted, these reports are regarded as already endorsed by the supervisor of the school/the head of the organization or the one who signed the Quality Education Fund Agreement for allocation of grant on behalf of the organization.



1. Attainment of Objectives

Objective 1: To promote awareness of stress and mental health in the workplace among teachers through educational talks at schools

From October 2009 to June 2010, which was the first stage of the project, five public lectures on stress and its impacts on mental health were launched with a total of 239 teachers joining the lectures. Four of the lectures were held at The Hong Kong Polytechnic University, and one was held at Yuen Long School District Primary School on Teachers' Development Day. Teachers were asked to fill out the evaluation forms after lectures, and positive feedback was received. According to the evaluation forms collected, 205 of 239 teachers (85.8%) felt satisfied with the lectures, and 185 of 239 teachers (77.4%) agreed that the lectures allowed them to understand more about stress. Around 85% (n=202) of the participants stated that they would promote the stress management program to other teachers, and almost 90% (n=214) of the participants expressed that the public lectures met the societal needs. From January to July 2010, which was the second stage of the project, two courses entitled "Trainers Program on Stress Management and Psychosocial Health Promotion Trainers' Program for Teachers" (hereafter refer as "Trainers Program(s)") were launched with 43 teachers having signed up for the program. According to the evaluation forms collected after the Trainers Programs, around 80% (n=36) of the participants agreed that the program helped enhance their knowledge towards stress reduction. The results showed that participants did gain more awareness of stress and mental health throughout the workshops. All of the certified health ambassadors showed readiness to implement the stress management program in their respective school settings. The data described above showed that the objective to promote awareness of stress and mental health in workplace among teachers through educational talks at schools was fully achieved.

Objective 2: To develop an intervention program to reduce perceived stress among teachers and improve their mental health

An intervention program entitled "Stress Management and Psychosocial Health Promotion Program for Teachers" (hereafter refer as "stress management program") was developed to help teachers alleviate stress and improve mental health. In line with the project objective, a multi-component intervention protocol was developed that consisted of cognitive behavioral therapies (CBT), self-management, progressive muscle relaxation (PMR), diaphragm breathing, visualization, self-acupressure, aromatherapy, and mind-body exercises. The intervention protocol has good internal validity as it was developed and endorsed by an expert panel comprising Project Leader (Professor in Occupational Therapy), an experienced occupational therapist, a certified health qigong master, and a research associate with postgraduate training in clinical psychology. The intervention protocol was pilot-tested among the participants in 1st and 2nd Trainers Programs and modifications following comments from the participants. The major modification was that the program was streamlined to 6 sessions because of the busy schedule of teachers during school terms as reflected by a number of teachers. For that reason, the developed protocol was different from the original proposal of developing a 10-session intervention program, but the content was similar to the original plan as stated in the proposal. The final intervention program implemented at schools consisted of 5-6 sessions, with each



session containing a one-hour lecture and a one-hour practice of the introduced stress management techniques. In view of the above, the objective of developing an intervention program was fully achieved.

Objective 3: To train trainers who serve as health ambassadors to promote and implement the intervention program at their own schools

From January to July 2010, which was the second stage of the project, two Trainers Programs were conducted at The Hong Kong Polytechnic University to recruit Mental Health Ambassadors to promote mental health at their schools. Altogether we recruited 43 teachers for the Trainers Programs, which exceeded the proposed number of 40. However, one of the participants withdrew due to medical reasons, and six of the participants failed to meet the attendance requirement and did not attend the examination. Eventually 36 teachers passed the certification examination and served as Mental Health Ambassadors for school-based implementation. The certified ambassadors organized the course entitled "Stress Management and Psychosocial Health Promotion Program for Teachers" under the supervision of the Project Leader and his project team at their own schools. This objective was considered fully achieved.

Objective 4 & 5: To evaluate the outcomes of the intervention program in alleviating stress and improving mental health of teachers, and evaluate generalizability of the intervention program to job satisfaction and teaching performance of teachers

To evaluate the program effectiveness, psychosocial and physiological measures were collected regularly from the participating teachers during the implementation of the stress management program at schools. Following the data collection plan of the proposal, the assessment data were collected before the commencement of the program (Pre-Ax), immediately after the program (Post-Ax), and 3 to 4 weeks after the completion of the program (Follow-up Ax). A battery of psychosocial health questionnaires with good psychometric properties including measures on stress, anxiety, depression, mental and physical wellbeing, job satisfaction, and teaching efficacy was employed. Saliva samples were collected for the laboratory tests of the level of cortisol that served as the proxy measure for the participant's physiological levels of stress across time. Ethical approval was obtained from the The Hong Kong Polytechnic University and informed consent was given to all participants before data collection took place. The outcome evaluations were strictly followed according to the research plan and objectives of the project proposal. From August 2010 to June 2011, there were 456 teachers, 279 assigned to the intervention group and 177 assigned to the control group, participated in the stress management program following the option of the schools. A total of 344 teachers from 14 schools, 214 from the intervention group and 130 from the control group, completed the psychosocial assessments. The response rate was over 75% of the total number of participating teachers (n=456) in the program. Evaluation questionnaires were also collected from the intervention group, and 178 out of 279 participants completed the questionnaires. Similary, the laboratory tests of salivary cortisol were successfully conducted among 96 teachers who voluntarily provided saliva samples. Respectively 60 and 36 teachers from the intervention and control groups provided the saliva samples for assessments. As stated in the proposal, the principle of intent-to-treat analysis was applied to the dropout participants (Montori &



Guyatt, 2001). Repeated measures ANOVAs of all outcome measures found that there were significant group by time interaction effects on depression, anxiety, stress, job satisfactions, and teaching efficacy among teachers presented with symptoms of mood disorders (i.e. depression, anxiety) or without symptoms of such disorders. Post hoc analyses revealed that teachers presented with mild levels of anxiety and teachers presented with moderate levels of stress relieved symptoms of anxiety and stress respectively after intervention, while teachers presented with no such symptoms of mood disorders enhanced teaching efficacy after they completed the teacher stress management program. The group by time interaction on salivary cortisol levels consistently indicated that teachers with mild or above levels of stress or depression reduced levels of salivary cortisol which possibly indicated better regulation of stress. The findings well aligned with the project objectives of alleviating stress, promoting psychological health, and improving teaching performance of teachers. Based on the above, the objectives were fully achieved.

Objective 6: To develop a system that schools will further implement the package after this proposed project is completed

In order to develop a system for schools to self-implement the package, 517 sets of booklets and DVDs summarizing the stress management techniques covered in this project were delivered to all primary schools in Hong Kong. The booklets included all the important elements from workshops and the project, and the DVDs demonstrated various exercises that were introduced in the project. Moreover, the certified Mental Health Ambassadors were trained to promote mental health at their own schools, and were expected to become sustainable outputs of the project. Because of their experience in providing a network of their colleagues, they were suitable candidates to serve as ambassadors. Despite the fact that the project has already been completed, the ambassadors will keep on promoting the importance of maintaining mental health. According to one of the implemented schools, teachers did organize a qigong workshop once a week to practice the mind-body exercise after joining the stress management program. Some implemented schools had conducted the stress management program on their Teachers' Development Days with a view including the program in teachers' daily trainings. It is concluded that the objective was fully achieved.



Table 1: Attainment of Objectives

Objective statement	Activities related to the objective	Extent of attainment of the objective	Evidence or indicators of having achieved the objective	Reasons for not being able to achieve the objective, if applicable
Objective 1: To promote awareness of stress and mental health in the workplace among teachers through educational talks at schools	Five public lectures were held from October 2009 to June 2010; two Trainers Programs were held from January 2010 to July 2010	Fully achieved	 More than 80% of participants claimed that lectures and the programs helped enhancing their knowledge on stress reduction Conducted 5 public lectures which engaged a total of 239 participants. Evaluation figures indicated 85.8% felt satisfied, 77.4% gained better understanding of stress, 89.6% agreed that the program met social needs; 84.6% would promote similar stress management program to other schoolteachers All of the certified Health Ambassadors showed readiness to promote and implement the stress management program in their school settings 	
Objective 2:	Protocol development by expert panel, pilot testing,	Fully achieved	Developed, tested, and modified the intervention	

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To develop an intervention program to reduce perceived stress among teachers and improve their mental health	and modifications made to the protocol		protocol in participants of 2 Trainers Programs Components of the intervention protocol (e.g., CBT, relaxation, etc.) matched the contents stated in the proposal
Objective 3: To train trainers who serve as health ambassadors to promote and implement the intervention program at their own schools	Two Trainers Programs were held from January 2010 to July 2010	Fully achieved	 Teachers recruited exceeded the proposed amount of participants, 36 teachers certified as Mental Health Ambassadors More than 80% of teachers in the Trainers Programs agreed that the program enhanced their knowledge on stress management, and all of the certified Health Ambassadors showed readiness to promote and implement the stress management program to other schoolteachers
Objective 4 & 5: To evaluate the outcomes of the intervention program in alleviating stress and improving mental health of teachers, and evaluate	Evaluating the outcomes of teacher stress management program in alleviating stress, improving mental health, job satisfactions, and teaching performance of teachers	Fully achieved	 Collected psychosocial assessment data from 344 teachers, and salivary samples from 96 teachers for laboratory tests on salivary cortisol levels Performed repeated



generalizability of the intervention program to job satisfaction and teaching performance of teachers			measures analysis according to project proposal • Findings provided essential support to the program effectiveness in stress alleviation, promoting psychological health, and enhancing teaching efficacy
Objective 6: To develop a system that schools will further implement the package after this proposed project is completed	Booklets and DVDs on stress management techniques were delivered to all primary schools in Hong Kong; Mental Health Ambassadors kept on promoting mental health message at schools	Fully achieved	One of the implemented schools claimed that teachers did practice the stress management techniques frequently, and the mental health message was widely spread Some implemented schools aimed to include the program in teachers' daily trainings



2. Project Impact

Summary of project impacts

The completed project made remarkable impact in several aspects with regards to emotional health and thus teaching efficacy of teachers. First, the public lectures implemented at Stage I successfully raised teachers' awareness of stress management in workplace with overwhelming feedback. It broadened teachers' horizons in regard of stress and the proper ways of coping with it. Second, the Trainers Programs implemented in Stage II provided substantial training opportunities for teachers to advance their knowledge in stress management and mental health promotion at schools. After the Trainers Programs, the teachers who passed the written and practical examinations were certified as Mental Health Ambassadors at schools. The Trainers Programs had therefore additionally increased the senses of achievements among the teachers as they became well-equipped with knowledge of stress management after the programs. More importantly, 456 teachers participated in the stress management program implemented at Stage III, of which 344 and 96 teachers respectively completed the psychosocial and salivary cortisol assessments which yielded fruitful findings in regard of the positive outcomes in relieving stress, alleviating symptoms of mood disorders, improving teaching efficacy, and regulation of stress at the physiological level. These promising outcomes suggested that the program had effectively prepared teachers to cope with stress in workplace and meet societal demands in delivering high standard of teaching. Therefore, the significant findings of this pioneer program provide empirical support for promoting it to all teachers in the local territory for relieving stress and enhancing stress management skills among teachers. Although the program was primarily conducted in primary schools, it had also attracted attention from secondary schools. Because of the press release and sharing among teachers, Project Leader and his team were invited to conduct the stress management program in secondary schools. Besides schools, the public also showed interest in the program. Several public workshops on stress management were held as requested and the feedback was extremely positive. Finally, the project will have remarkable impact to the scientific when the results from the project are published in peer-reviewed journals. Based on this project, researchers in this area will continue their research along this line with improved methodology.

Data analysis and key findings of stress management program

Data analysis. In order to reduce the impact of dropouts on subsequent analysis, we only included the sample with valid data in the pre- and post-assessments for repeated-measures analysis, whereas missing data in the follow-up assessments were replaced using the "Last-Observation-Carried-Forward (LOCF)" method in order to comply with "Intent-to-treat" analysis (Montori & Guyatt, 2001). To evaluate the extent to which different teachers were responsive to the intervention program, we analyzed the intervention effects on different sub-samples presented with symptoms of depression, anxiety, and stress, the sub-sample who was close to the thresholds of stress-related disorders, and the sub-sample presented with no substantial symptoms of depression or anxiety respectively. The symptoms of depression, anxiety, and stress were identified by the respective cutoffs in the 21-item Depression, Anxiety, and Stress Scales (DASS; Lovibond & Lovibond, 1995). It was found that respectively 84 (33%), 146 (57%), and 123 (48%) teachers in the whole sample of 255 teachers (that are valid for analysis) were presented with depression, anxiety, and stress at the mild or above levels before the commencement of the intervention program. Repeated-measures ANOVAs were conducted to examine whether the intervention program significantly relieved the above symptoms in the post- and follow-up assessments, and whether the intervention effects extended to improvements in other domains such as teaching efficacy and job satisfaction. The baseline scores were entered as covariates if there were significant group differences at the baseline. Significant level was set at .050 for all analyses. The key findings are summarized in Tables 2 and 3.

Intervention effects on psychosocial domains. For teachers presented with depression symptoms at mild or above levels (n=84), it was found that there was significant group by time interaction effects on depression (F=3.17, df=2.81, p=.047, $\eta^2=.07$). Post hoc analysis found that there were no significant group differences in the changes of depression levels at the post- and follow-up assessments when compared to the baseline interval (ps>.050). However, it was noted that the between-group difference in the changes of

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depression was close to significance at .050 level in the post-assessment (F=3.45, df=1.82, p=.067, $\eta^2=.04$). On average, the intervention group had reduced their depression symptoms by 12% from a moderate level (M=16.08, SD=6.45) to a mild to moderate level (M=13.35, SD=7.76). For the selected sub-sample presented with anxiety symptoms at mild or above levels, (n=142), there were significant group by time interaction effects on anxiety levels (F=4.36, df=2.143, p=.014, η^2 =.06). Post hoc analysis found that the intervention group had significant reduction in the participants' anxiety symptoms compared to the control group in the post-assessment (F=5.57, df=1,144, p<.025 with Bonferroni adjustment, $\eta^2=.04$). On average, their anxiety symptoms reduced by 16% from a moderate to severe level (M=14.93, SD=6.40) to a moderate level (M=12.22, SD=7.36) after the intervention. For the sub-sample presented with mild or above level of stress (n=123), the repeated measures analyses did not reveal any significant group by time interactions in all outcome measures (ps>.050). Further analysis by selecting samples with more severe levels of stress found that there existed significant group by time interaction on stress level in a sub-sample of participants (n=67) who scored 21 or above in the stress subscale of DASS which represented a moderate or above level of stress (F=3.92, df=2,64, p=.025, η^2 =.11). Post hoc analysis of this subsample indicated that the intervention group significantly relieved symptoms of stress compared to control group at the post-assessment (F=7.85, df=1.65, p<.025 with Bonferrioni adjustment, $\eta^2=.11$) and follow-up assessment $(F=4.06, df=1.65, p<.050, \eta^2=.06)$ from a severe level in baseline (M=26.69, SD=5.27) to a moderate level in post-assessment (M=19.38, SD=9.64; mean percentage change=-29%) and follow-up assessment (M=20.55, SD=9.19; mean percentage change=-24%) on average. In a selected sub-sample of teachers who were close to or above the thresholds of mild depression and stress (depression scale score ≥ 8 and stress scale score > 14 in DASS), we found that there were significant overall group by time interaction effects on depression (F=3.87, df=2,93, p=.024, η^2 =.08), anxiety (F=3.29, df=2,93, p=.042, η^2 =.07), and stress (F=3.14, df=2.92, p=.048, $\eta^2=.06$). Post hoc analyses further revealed that there were significant reductions in depression (F=4.59, df=1.94, p<.050, $\eta^2=.05$), anxiety (F=3.98, df=1.94, p<.050, $\eta^2=.04$), and stress (F=6.28, df=1.93, p<.025 with Bonferroni adjustment, $\eta^2=.06$) in the post-assessment by 17%, 14% and 19% respectively. For the rest of the teachers (n=105) who did not present with symptoms of depression or anxiety (i.e. depression score<10 and anxiety score<8), it was found that there was significant group by time interaction effect on teaching efficacy (F=3.12, df=2,102, p=.048, η^2 =.06) but not on other outcome measures (ps>.05). Post hoc analysis suggested that the intervention group significantly improved on teaching efficacy compared to the control group in the post-assessment (F=5.99, d=1,103, p<.025 with Bonferroni adjustment, $\eta^2 = .05$). Teachers in the intervention group reported higher frequency of applying student engagement and instructional strategies by 43% on average after they completed the teacher stress management program.

Intervention effects on physiological markers of stress: To objectively investigate the program's impact on the physiological status of participants, laboratory tests on salivary cortisol levels were performed on saliva samples provided by teachers in three assessments. Our previous review (Tsang & Fung, 2008) hypothesized that the practice of mindful exercise such as qigong would reduce stressful signals transmitted to the limbic system, which results in a decrease of adrenocorticotropic hormone (ACTH) secreted from the anterior pituitary gland. With the reduction of ACTH, the activities in hypothalamic-pituitary-adrenal (HPA) axis would be down-regulated, leading to a reduction of stress hormones including cortisol and other glucocorticoids released from adrenal cortex. A similar regulatory effect on salivary cortisol has been reported in intervention studies of yoga (Banasik et al., 2011; Vadiraja et al., 2009) and PMR exercises (Nickel et al., 2005; Pawlow & Jones, 2002; 2005) among patients with breast cancer and healthy individuals respectively.

As cortisol levels are closely related to stress and depression symptoms, we included a sub-sample of teachers presented with mild or above levels of stress or depression symptoms for analysis. Controlling for the influence of stress posed by different school climates, the repeated measures ANCOVA showed that the group by time interaction effect was significant (F=4.18, df=1,48,p=.046, η ²=.08). It was found that after the intervention program, the salivary cortisol levels of the intervention group were reduced from 1.50 to 1.22



ng/mg protein (7% decrement on average), while the cortisol levels of the control group increased from 0.82 to 1.29 ng/mg protein (57% increment on average). The significant finding provided additional evidence that the intervention program was effective in regulating the hormonal responses to stress among teachers presented with stress or depression symptoms, which aligned closely with previous studies that reported the regulatory effect on salivary cortisol following practice of mindful and relaxation exercises (Banasik et al., 2011; Nickel et al., 2005; Pawlow & Jones, 2002; 2005; Vadiraja et al., 2009). The project therefore made impact on the scientific investigation of stress management program drawing empirical evidences from the physiological makers of stress that associate with mood status.



Table 2: Group by Time Interaction Effects on Selected Sub-samples

				Mean	s (SDs)						
		Pro	e-Ax	Pos	st-Ax	FU	J-Ax	\overline{F}	df	p	Effect size
	Sample	Exp	Con	Exp	Con	Exp	Con			-	
Depression	(1)	16.08	15.91	13.35	16.03	14.91	14.57	3.17	2,81	.047*	.07
(Exp: <i>n</i> =40; Con: <i>n</i> =44)		(6.45)	(5.47)	(7.76)	(7.29)	(9.02)	(7.62)				
Anxiety	(2)	14.93	16.04	12.22	15.91	13.10	14.41	4.36	2,143	.014*	.06
(Exp: <i>n</i> =72; Con: <i>n</i> =74)		(6.40)	(7.13)	(7.36)	(8.86)	(8.33)	(8.16)				
Stress	(3)	22.44	24.59	17.97	22.22	18.66	21.59	1.53	2,120	.220	.02
(Exp: <i>n</i> =59; Con: <i>n</i> =64)		(5.71)	(7.18)	(8.54)	(9.30)	(8.21)	(9.61)				
Stress (cut-off at 21)	(4)	26.69	29.16	19.38	26.58	20.55	26.53	3.92	2,64	.025*	.11
(Exp: <i>n</i> =29; Con: <i>n</i> =38)		(5.27)	(5.76)	(9.64)	(8.29)	(9.19)	(7.82)				
Depression	(5)	14.52	15.28	11.67	15.43	13.06	13.98	3.87	2,93	.024*	.08
(Exp: $n=49$; Con: $n=47$)		(6.67)	(5.78)	(7.99)	(7.61)	(8.47)	(7.98)				
Anxiety	(5)	16.78	18.66	13.59	18.35	14.61	16.77	3.29	2,93	.042*	.07
(Exp: <i>n</i> =49; Con: <i>n</i> =47)		(7.06)	(7.27)	(7.81)	(8.82)	(8.27)	(8.17)				
Stress a	(5)	22.45	25.83	17.92	24.13	18.90	23.83	3.14	2,92	.048*	.06
(Exp: <i>n</i> =49; Con: <i>n</i> =47)		(6.46)	(7.39)	(8.72)	(8.60)	(8.66)	(9.30)				
Teaching Efficacy	(6)	69.75	76.84	76.10	74.81	72.30	73.99	3.12	2,102	.048*	.06
(Exp: $n=61$; Con: $n=44$)		(21.16)	(16.02)	(13.62)	(16.13)	(15.28)	(17.16)				
Cortisol (ng/mg protein) b	(7)	1.50	0.82	1.22	1.29			4.18	1,48	.046*	.08
(Exp: <i>n</i> =33; Con: <i>n</i> =18)		(1.09)	(0.49)	(1.06)	(1.83)						

Notes: Numbers respectively refer to sub-samples of teachers who were presented with (1) mild or above level of depression; (2) mild or above level of anxiety; (3) mild or above level of stress; (4) moderate level of stress (cutoff at 21 in stress subscale of DASS); (5) close-to-threshold or above levels of mild depression and stress; (6) no symptoms of depression or anxiety; (7) mild or above levels of depression or stress. ^a ANCOVA taken for controlling baseline group difference; ^b ANCOVA taken for controlling the impact of stressor from organizational climate; * p<.050



Table 3: Post hoc Analysis

		p	-values
	Sample	Post-Ax	FU-Ax
Depression	(1)	.067	.933
Anxiety	(2)	.020**	.867
Stress (cut-off at 21)	(4)	.007**	.048*
Depression	(5)	.035*	923
Anxiety	(5)	.049*	.863
Stress	(5)	.014**	.134
Teaching Efficacy	(6)	.016**	.121

Notes: Numbers respectively refer to sub-samples of teachers who were presented with

- (1) mild or above level of depressions;
- (2) mild or above level of anxiety;
- (4) moderate level of stress (cutoff at 21 in stress subscale of DASS);
- (5) close-to-threshold or above levels of mild depression and stress;
- (6) no symptoms of depression or anxiety

^{*}p<.05; **p<.025 (with Bonferroni adjustment)



3. Cost-effectiveness

The public lectures in Stage I attracted 239 teachers and the Trainers Programs in Stage II had involved 36 teachers. There were a total of 456 teachers participated in the stress management program during Stage III, in which 279 of them joined the intervention group and 177 of them joined the control group. The actual number of teachers who had participated in the stress management program exceeded the proposed 400 teachers. Nevertheless, only 344 participants did complete the evaluation forms after the program. In order to calculate the unit cost for the direct beneficiaries, all the participants at all stages should be counted. Thus, the total number of direct beneficiaries was 731 teachers, which was the sum of the participants in Stage I, Stage II and Stage III. The unit cost for the direct beneficiaries was \$1,609.78 (Total Cost/Number of Participants).

Promotion materials in form of exercises DVDs and booklets were distributed to all primary schools in Hong Kong which encouraged self-implementation of the stress management program. In addition to the deliverables, 36 teachers were certified as Mental Health Ambassadors through completing the Trainers Programs. These ambassadors were also considered as one of the sustainable development of the project as they would help promoting mental health and mental health related workshops at their own schools. Therefore, it is strongly believed that the stress management program could be sustained.

Since all primary schools in Hong Kong received one set of booklets and exercises DVDs, there require no extra resources for future implementation of the stress management program. The booklet and exercises DVD provide all the necessary information for the program to be implemented. Thus, school has the basic framework to replicate the project. In addition to booklets and exercises DVDs, schools could also obtain the relevant information of the current project from various media, such as RTHK and Ming Pao newspaper. Details of the deliverables will be discussed in the next section.

The materials developed and the Mental Health Ambassadors trained were not simply applied to the 14 participated schools and 695 participated teachers. The materials, such as the deliverables, are available for all primary school teachers. Thus, the indirect beneficiaries actually involve a large population. According to the most updated statistics provided by the Education Bureau of Hong Kong, the total number of primary school teachers in the academic year 2010/2011 was 21,902 teachers. As each primary school received one set of booklets and exercises DVDs, a total of 21,902 primary school teachers are in fact benefited from this project. The unit cost for the indirect and direct beneficiaries is estimated to be at \$53.73 (Total Cost/Total Number of Primary School Teachers in Hong Kong). Also, Mental Health Ambassadors from the Trainers Programs were a long-term investment of this project. As the project has completed, these ambassadors could not only help promoting mental health among their colleagues, but also assist in future implementation of similar program. Since they had gained knowledge on stress management techniques, it could reduce the cost of future implementation.

Table 4: Budget Checklist

Budget Items	Approved Budget (a)	Actual Expense (b)	Change [(b)-(a)]/(a) +/- %
Staff Cost	\$1,024,364	\$910,421.72	-11.12%
Equipment	\$142,611	\$186,484.3	+30.76%
General Expenses	\$131,700	\$79,844.28	-39.37%



4. Deliverables and Modes of Dissemination

About 517 sets of booklets and exercises DVDs on "Stress Management and Mental Health Promotion for Teachers in Hong Kong (教師壓力與精神健康推廣計劃)" were distributed to all primary schools in Hong Kong via mailing in September 2011. The booklets included an array of stress management techniques as taught during the stress management program, and they could facilitate self-implementation among primary school teachers. The DVDs demonstrated three stress reducing exercises which included acupressure, qigong and yoga. The DVDs could facilitate the learning of exercises as taught during the stress management program. It is important that the booklets and exercises DVDs were delivered to all primary schools, as these deliverables could help facilitate the learning of the stress management techniques, and further implementing the stress management program at schools after the completion of the project. 150 sets of booklets and exercises DVDs are reserved for the Quality Education Fund Secretariat for future use.

The Project Leader was interviewed by Ming Pao "教得樂" on mental health programs and complementary and alternative medicine in reducing stress. The press was released at Ming Pao (Volume still 445) 13 April. 2010. which is available on the Ming on [http://life.mingpao.com/cfm/Ebook2.cfm?SubCategory=happy&Page=8]. The Project Leader expressed his view on the importance of providing mental health programs for teachers, and the potential use of complementary and alternative therapies in quelling stress related health problems in the article. Various stress reducing methods were mentioned in the article, such as aromatherapy, gigong and progressive muscle relaxation, etc. The article was easily reached by the general public as it was published at one of the well known newspapers in Hong Kong. The article helped disseminating the stress management program and raising the public awareness towards mental health issues.

The Project Leader was interviewed by Ms. Smile Cheung of Radio Television Hong Kong (RTHK) (Radio 5) on a Chinese talk show titled "笑容從家開始". This audio program was broadcasted on 13 file is accessible at the RTHK 2010. and the audio (Radio [http://programme.rthk.org.hk/channel/radio/programme.php?name=radio5/smilefamily&d=2010-12-13&p= 4304&e=124686&m=episode1 the and on Project Leader's [http://www.rs.polyu.edu.hk/rshtsang/]. The topic of the audio program was about gigong exercise and its effect on depression. The Project Leader disseminated his research on stress management to the general public, and expressed his view on the importance of practicing qigong, which is one of the mind-body exercises, in alleviating depressive symptoms among high risk population. The audio program helped promote the stress management program and enhance the public awareness towards mental health issues and mind-body exercises.

The Project Leader and his project team participated in a Chinese television program titled "做個健康 快活人-無懼情緒的呼喚" which was produced by RTHK. The television program was broadcasted on 30 2010 **TVB** Jade. available the RTHK website August, on and is on [http://programme.rthk.hk/rthk/tv/programme.php?name=tv/medicaldiscovery&d=2011-08-30&p=5128&e= 150516&m=episode]. The program was mainly focused on various ways to relieve stress of the mother with an autistic child, and Project Leader and his project team were invited to be professional consultants towards stress management. The Project Leader was interviewed by the host of the program, and disseminated his research findings on various stress management techniques.

The Project Leader and his project team had written two manuscripts related to the stress management program for elementary school teachers in Hong Kong. The first manuscript "Intervention effects of a CAM-based stress management program for elementary school teachers in Hong Kong" was submitted to Evidence-based Complementary and Alternative Medicine (eCAM), and is currently under review. The manuscript has achieved an impact factor of 2.964 and was classified as Grade A journal in the field of rehabilitation. The second manuscript "Anti-depressive effects of a CAM-based stress management program for elementary school teachers in Hong Kong" is currently under preparation, and will be soon submitted for



publication in a peer-reviewed journal. Both manuscripts indicated the significant results of the current stress management program, which would be a nice dissemination of the project and also could be used as references for future studies.



Table 5: Dissemination Value of Project Deliverables

Item description (e.g. type, title, quantity, etc.)	Evaluation of the quality and dissemination value of the item	Dissemination activities conducted (e.g. mode, date, etc.) and responses	Is it worthwhile and feasible for the item to be widely disseminated by the QEF? If yes, please suggest the mode(s) of dissemination.
About 517 booklets on "Stress	The booklets can facilitate the	Items were distributed to all	150 copies of the booklets were given to QEF.
Management and Mental Health	learning of the stress	the primary schools in Hong	The stress management techniques which
Promotion for Teachers in Hong	management techniques as	Kong via mail in September	were taught during the program can be
Kong (教師壓力與精神健康推廣計	taught during the stress	2011	implemented in various stress reduction
劃)"	management program		workshops
About 517 exercises DVDs on	The exercises DVDs can	Items were distributed to all	150 copies of the DVDs were given to QEF.
"Stress Management and Mental	facilitate the learning of the	the primary schools in Hong	The exercises which were taught during the
Health Promotion for Teachers in	exercises as taught during the	Kong via mail in September	program can be implemented in various stress
Hong Kong – Acupressure, Qigong,	stress management program	2011	reduction workshops
Yoga (教師壓力與精神健康推廣計			
劃 – 穴位按壓,八段錦,瑜珈)"			
Press release in Chinese titled "教得	The article introduced mental	The press was released at	The article can be obtained from Ming Pao
樂"	health and complementary and	Ming Pao (Volume 445) on	website.
	alternative medicine in reducing	13 April, 2010	
	stress		
RTHK Chinese audio program titled	The audio program disseminated	Project Leader was	The audio file can be obtained from the
"笑容從家開始"	Project Leader's research on	interviewed by Ms. Smile	RTHK website and Project Leader's personal
	stress management to the general	Cheung of RTHK (Radio 5)	website.
DELLIN CITY	public	on 13 December, 2010	
RTHK Chinese television program	The television program	Project Leader was	The television program can be found on the
titled "做個健康快活人 - 無懼情	disseminated Project Leader's	interviewed on 9 and 13	RTHK website and Project Leader's personal
緒的呼喚"	research on stress management	June, 2011 and the program	website.
	to the general public	was broadcasted on 30	
N	The	August on TVB Jade	The
Manuscript titled "Intervention	The manuscript achieved an	The manuscript was	The manuscript is currently under review by

This form/guidelines can be downloaded from the QEF webpage at http://qef.org.hk.



effects of a CAM-based stress	impact factor of 2.964, and was	submitted to	the eCAM. Once the manuscript is published,
management program for elementary	classified as Grade A type. The	Evidence-based	it can be used as reference for future studies
school teachers in Hong Kong"	study was based on the stress	Complementary and	
	management program, and	Alternative Medicine	
	investigated possible ways to	(eCAM) and was under	
	reducing stress among	review at the current stage	
	elementary school teachers in		
	Hong Kong		
Manuscript titled "Anti-depressive	The study was based on the	The manuscript was	The manuscript is currently under
effects of a CAM-based stress	stress management program, and	currently under preparation	preparation. Once the manuscript is ready, it
management program for elementary	aimed at reducing depression		will be submitted for publication.
school teachers in Hong Kong"	among elementary school		
	teachers in Hong Kong		



Elements Contributed to the Success of the Project

The project consisted of three stages, and each stage formed the foundation on which the next stage built. The public lectures, which were the first stage of the project, introduced the stress management techniques and Trainers Programs to primary school teachers. The response was so positive from primary schools in Hong Kong. The public lectures were considered successful as it had recruited 43 teachers, which exceeded the proposed number of 40, to join the Trainers Programs that were the main content of the project. In order words, the successful launching of the first stage was the essential element leading to the smooth implementation of the second and third stages. Participants of the Trainers Programs were assigned the task to share their knowledge and skills on stress management with their colleagues. They had to attend the examination, and the certified teachers would also work closely with the Project Leader to implement the intervention program at various primary schools, which was the third stage of the project. Therefore, the second element that contributed to the success of the project was the comprehensiveness and effectiveness of the stress management program that attracted the ambassadors to complete the trainer program and implement what they learnt at their own schools.

The third element that contributed to the success of the project was the societal needs for this kind of service. According to various research studies, teachers in Hong Kong suffered from high level of work stress. Project Leader had an insight into this issue, and directed his efforts for the development of this project to relieve teachers' stress. The Project Leader endeavored to develop an easy-to-learn and yet effective program for all teachers. This may be regarded as a timely service to the teaching community in Hong Kong. Because of the easy-to-learn approach, the program was highly appreciated by the participated teachers. According to the evaluation forms collected after five public lectures (n=239), 77.4% (n=185) of the participated teachers admitted that the lectures allowed them to acquire more understanding on stress management techniques. Almost 90% (n=214) of the participated teachers agreed that the public lectures met the societal needs.

Feasibility of Continuing the Project

All primary schools in Hong Kong received booklets and exercises DVDs on "Stress Management and Mental Health Promotion for Teachers in Hong Kong (教師壓力與精神健康推廣計劃)" as deliverables of this project. The booklets include all the important elements derived from the stress management workshops of the project. The DVDs demonstrate various practical exercises that were introduced during the stress management program. Although the project was completed, teachers who participated in the program could continue to practice the exercises and stress management techniques with reference to the booklet and the exercise DVD. In addition, the health ambassadors may use the materials to conduct further stress management workshops for the teachers who have not had the chance to join the program for the past two years. To conclude, the ambassadors and deliverables are important assets of this project which may sustain the project in the future.

The current project was only implemented in some of the primary schools in Hong Kong. Although the deliverables could provide the necessary information for practicing stress management skills, practical workshops would still be preferred by those primary schools that had not joined this project. More importantly is that the Quality Education Fund has approved another project (Ref: 2010/140) entitled "Promoting Healthy Lifestyle and Biopsychosocial Wellness of Teachers in Hong Kong" that further develop similar kinds of health program to other primary and secondary schools in Hong Kong based on the experienced we accumulated in this project.



5. Activity List

The major activities during the project period are listed in Table 6. The participants' evaluations for these activities were collected. Their evaluations are summarized in this section.

Table 6: Summary of Activities

			No. of pa	rticipant	s		
Types of activities (e.g. seminar, performance, etc.)	Brief description (e.g. date, theme, venue, etc.)	schools	teachers	students	others (Please specify)	Feedback from participants	
Five Public Lectures (Stage I)	 Date: From October 2009 to June 2010 Venue: The Hong Kong Polytechnic University and Yuen Long School District Primary School Theme: Stress Management and Psychosocial Health Promotion for Teachers 	N/A	239	N/A		85.8% of participants felt satisfied of the public lectures and 77.4% agreed that they knew more about stress after lectures	
Two Trainers Programs (Stage II)	 Date: From January 2010 to July 2010 Venue: The Hong Kong Polytechnic University Theme: Trainers Program on Stress Management and Psychosocial Health Promotion Trainers' Program for Teachers 	25	36	N/A		70 to 80% agreed that the lectures could enhance knowledge on stress	



School Implementation of Stress	•Date: From August 2010 to June 2011	14	456	N/A	60 to 80% agreed that
Management Program (Stage III)	• Venue: At 14 primary schools				the introduced stress
	•Theme: Stress Management and Psychosocial				management
	Health Promotion Program for Teachers				techniques could
					reduce stress and be
			<u> </u>		promoted to other
					teachers



Evaluations from Participants in Public Lectures (Stage I)

The collected feedback from 239 participating teachers indicated that 205 (85.8%) of them felt satisfied with the lectures, 185 (77.4%) agreed that they acquired more knowledge about stress after the lecture, 214 (89.6%) agreed that the public lectures met the societal needs. Based on the evaluation forms collected, teachers also pointed out that the three main sources of stressors were heavy workload (86.6%; n=207), school external assessment (84.6%; n=202), and managing students' misbehaviors (83.6%; n=200). These figures indicated that the public lectures in Stage I received very positive feedback from participants and well met the project objectives of promoting teachers' awareness of stress and mental health at workplace. Table 7 showed the summary of the evaluations from the five public lectures.

Table 7: Summary of the Evaluation of the Five Public Lectures (n=239)

Factors	Percentage (% of Satisfaction/ % of Agree)
Teachers felt satisfied of the public lecture	85.8 (n=205)
Agreed knew more about stress after the lecture	77.4 (n=185)
Agreed our public lectures comply with the needs of the society	89.6 (n=214)
Agreed heavy workload was a stressor	86.6 (n=207)
Agreed school external assessment was a stressor	84.6 (n=202)
Agreed managing students' misbehaviors was a stressor	83.6 (n=200)

Evaluations from Participants in Trainers Programs (Stage II)

There were two Trainers Programs conducted during the mentioned period. According to the evaluations of sessions 1 to 9 collected in the 1st Trainers Program among the participating teachers, respectively 65.2 % to 91.3% and 47.8 % to 91.3% of participants agreed that the lecture sessions increased their knowledge on stress management and the practice of the introduced stress management techniques could reduce stress. Most lectures and practice sessions received over 80% of agreement from participants. As some participants stated that Tai Chi was difficult to learn, we deleted this session in the 2nd Trainers Program. In contrast, the session on cognitive behavioral therapy session received a very satisfactory feedback on enhancing knowledge on stress and lecture theme from participants (90.9%; n=20). Most participants indicated that one more session on this lecture theme would be preferred. As a result, the cognitive behavioral therapy session was extended to two lectures in the 2nd Trainers Program. From the evaluations of sessions 1 to 5 in the 2nd Trainers Program, it was indicated that most of the lectures acquired more than 80% and some made up to 100% of satisfaction among the 16 participating teachers. According to the evaluations of sessions 6 to 9 in the 2nd Trainers Program, more than 85% of the 14 participating teachers agreed that the lecture enhanced knowledge on stress and lecture theme. To conclude, the two Trainers Programs successfully enhanced teachers' knowledge on stress management and reduced their levels of stress. The summaries of evaluations of the 1st and 2nd Trainers Programs were presented in Table 8 and 9.



Table 8: Summary of Evaluation in 1^{st} Trainers Program (n=23 from lecture 1-5; n=22 from lecture 6-9)

Lecture		Factors (% of Satisfaction/ % of Agree)			
		Lecture could enhance knowledge on stress and lecture theme	Practical session could reduce stress	Practical session could be promoted to other teachers at school	
1	(Introduction on stress, breathing, progressive muscle relaxation and visualization)	86.9 (n=20)	87.0 (<i>n</i> =20)	78.2 (n=18)	
2	(Yoga)	82.6 (<i>n</i> =19)	91.3 (<i>n</i> =21)	78.3 (<i>n</i> =8)	
3	(Qigong)	82.6 (n=19)	86.9 (n=20)	87.3 (n=20)	
4	(Tai Chi)	65.2 (n=15)	47.8 (n=11)	65.2 (n=15)	
5	(Acupressure)	91.3 (n=21)	86.9 (n=20)	91.3 (n=21)	
6	(Aromatherapy)	86.4 (<i>n</i> =19)	90.9 (n=20)	86.3 (n=19)	
7	(Cognitive Behavioral Therapy)	90.9 (n=20)	81.8 (n=18)	86.3 (n=19)	
8	(Self-management)	77.3 (n=17)	86.4 (n=19)	77.3 (n=17)	
9	(Manage change)	77.3 (n=17)	77.3 (n=17)	72.7 (n=16)	

Note: Respectively 23 and 22 participants completed the evaluation form of lectures 1 to 5 and lecture 6 to 9.



Table 9: Summary of Evaluation in 2^{nd} Trainers Program (n=16 from lecture 1-5; n=14 from lecture 6-9)

Lecture	Factors				
	Lecture could enhance knowledge on stress and lecture theme	(% of Satisfaction/ % of Agree Practical session could reduce stress	Practical session could be promoted to other teachers at school		
l (Introduction on stress, breathing, progressive muscle relaxation and visualization)	87.5 (n=14)	75.1 (n=12)	81.3 (<i>n</i> =13)		
2 (Manage change)	56.3 (<i>n</i> =9) (43.8%, <i>n</i> =7 chose average)	N/A	50.0 (n=8) (43.8%, $n=7$ chose average, 6.3%, $n=1$ didn't answer because of absence)		
3 (Yoga)	62.6 (<i>n</i> =10) (18.8%, <i>n</i> =3 chose average, 18.8%, <i>n</i> =3 didn't answer)	68.8 (<i>n</i> =11) (12.5%, <i>n</i> =2 chose average, 18.8%, <i>n</i> =3 didn't answer)	81.3 (<i>n</i> =13)		
4 (Qigong)	100 (<i>n</i> =16)	100 (<i>n</i> =16)	93.8 (<i>n</i> =15)		
5 (Acupressure)	81.3 (<i>n</i> =13)	87.5 (n=14)	100(n=16)		
6 (Aromatherapy)	100 (n=14)	78.6 (<i>n</i> =11)	85.7 (<i>n</i> =12)		
7 (Self-management)	85.7 (<i>n</i> =12)	71.4 (<i>n</i> =10)	85.7 (<i>n</i> =12)		
3 (Cognitive Behavioral Therapy I)	92.9 (<i>n</i> =13)	92.9 (<i>n</i> =13)	92.9 (<i>n</i> =13)		
9 (Cognitive Behavioral Therapy II)	92.9 (<i>n</i> =13)	92.9 (<i>n</i> =13)	92.9 (<i>n</i> =13)		



Evaluations from Participants in Stress Management Program (Stage III)

The stress management program at schools consisted of 5 to 6 sessions, with each lasting approximately 2 hours. Each session consisted of a one-hour lecture and a one-hour practice of the stress management techniques Table 10 shows the content of the program. For administrative reasons, the order of training sessions differed among the schools except the introduction session in the first session.

Table 10: Content of Stress Management Program

Sessions	Content		
1	Lecture: Introduction to stress and its impacts on health Practice: Progressive muscle relaxation, diaphragm breathing, visualization		
2	Lecture: Introduction to mind-body exercise Yoga Practice: Yoga		
3	Lecture: Introduction to mind-body exercise Qigong Practice: Qigong		
4	Lecture: Introduction to Acupressure Practice: Self-acupressure		
5	Lecture: Self-management and Managing changes Practice: Revision on mind-body exercise		
6	Lecture: Introduction to Cognitive Behavioral Therapy (CBT) and Aromatherapy Practice: Class assignments and revision on mind-body exercises		

Evaluation questionnaires were collected from the participants in the intervention group (n=279) after the program. 178 questionnaires out of a total 279 participants were collected. Participants were asked to rate their degree of likeness with the lecture and practice of each session. Because the intervention sessions (expect the first session) varied slightly across schools, the number of respondents for each session varied. The ratings were summarized using frequency statistics out of the total number of respondents in each session. Participants who rated 'helpful/ clear/ suitable' or 'very helpful/ very clear/ very suitable' for the lecture or practice in each session were aggregated. These ratings indicated the number of participants who 'agreed' with the statements. The results are summarized in Table 11.

As indicated in Table 11, 59.3 % to 89.1% (n=48-115) of teachers agreed that the lectures enhanced 'their knowledge of stress and the lecture theme'. The lecture on 'Acupressure' (Session 4) had received the highest percentage of agreement from the participants (89.1%, n=115), while the percentage of agreement with the lecture given on 'Self-management and managing changes (Session 5) was among the lowest (59.3%, n=48). Over 70% of participants agreed that the instructions given in the lectures were clear, which ranged from 72.8 %to 88.4% (n=59-122). Whereas, respectively 59.8% to 81.9% (n=61-113) and 58.3% to 82.2% (n=35-106) of participants agreed that the practice session could 'reduce stress' and 'be promoted to other teachers at schools. The practice session on 'self-acupressure' (Session 4) received most positive feedback from the participants, with over 80% (n=104-106) of participants agreeing that the self-acupressure practice reduced stress and should be promoted to other school teachers. The percentages of agreement with the practice of Yoga and Qigong were similar, which ranged from 70% to 80% (n=86-93 & n=106-107 respectively). The feedback on the practice sessions in session 5 and 6 were among the lowest, which only obtained about 60% (n=33-73) of agreement among the participants. The practice sessions in these two sessions were mainly revisions on mind-body exercises (Yoga & Qigong) and class assignments. Overall, more than 90% (n=178) of participants rated the lecture and practice sessions at the average or above levels. It was generally indicated that the lecture and practice in each session were well-received by the



participants.

The participants commented highly of the project. Many participants remarked that the lectures were easy to understand and enhanced their knowledge on stress as well as the ways to cope with it. Some direct cites included "The lectures are complemented by practical sessions, which allows participants to easily understand the concepts and theory of stress and the ways to cope with it", and "Different videos and materials are provided with different mind-body exercises", which allows participants to practice the exercises after the project. Many participants opined that the content of the program was interesting. Examples of their remarks were "The content like Qigong, Yoga and Acupressure are interesting", and "The practice of mind-body exercises truly allows participants to enjoy the workshops". The participants also agreed that the implementation was able to assist them in relieving stress from their workplace (e.g. "The 1.5 hour workshop is really a stress relieve from work"; "The various topics are useful in assisting teachers to better deal with stress").



Table 11: Summary of Evaluations from Participants in Stress Management Program

	Factors							
-	(1) Lecture could enhance knowledge of stress and lecture theme		(2) Lecture provided clear instructions		(3) Practice session could reduce stress		(4) Practice session could be promoted to other teachers	
Session topic ^a	% of Agree	% of above average	% of Agree	% of above average	% of Agree	% of above average	% of Agree	% of above average
1	83.7	99.3	85.1	100.0	81.9	100.0	77.4	99.3
	(n=118)	(n=140)	(n=120)	(n=141)	(n=113)	(n=138)	(n=106)	(n=136)
2	79.2	99.2	83.2	99.2	79.5	99.1	73.5	100.0
	(n=99)	(n=124)	(n=104)	(n=124)	(n=93)	(n=116)	(n=86)	(n=117)
3	84.8	99.3	88.4	100.0	76.8	100.0	78.1	100.0
	(n=117)	(n=137)	(n=122)	(n=138)	(n=106)	(n=138)	(n=107)	(n=137)
4	89.1	100.0	90.7	100.0	80.6	99.2	82.2	100.0
	(n=115)	(n=129)	(n=117)	(n=129)	(n=104)	(n=128)	(n=106)	(n=129)
5	59.3	100.0	72.8	98.8	62.3	96.2	58.3	98.3
	(n=48)	(n=81)	(n=59)	(n=80)	(n=33)	(n=51)	(n=35)	(n=59)
6	72.3	99.2	73.9	99.2	59.8	99.0	61.9	98.3
	(n=86)	(n=118)	(n=88)	(n=118)	(n=61)	(n=101)	(n=73)	(n=116)

^a Session topic: 1) Introduction, 2) Yoga, 3) Qigong, 4) Acupressure, 5) Self-management, 6) CBT & Aromatherapy



6. Difficulties Encountered and Solutions Adopted

The project on the whole was completed successfully without much difficulty encountered. There were two minor problems. The first difficulty that the team faced was on management of human resources. The main problem in this area was related to the unpredictable change in staff members that slowed down slightly the progress of the implementation. As a few of the team members resigned before the completion of the project, the Project Leader needed to go through the recruitment process and staff training again. However, smooth implementation in the third stage saved some time. Eventually the project was completed following the proposed timeframe.

Second, some equipment items were not planned but actually purchased during project implementation. These included computers and ipads. The main purpose was to enhance the outcomes of the project. The actual expenses on equipment therefore exceeded the original plan. Fortunately, there were surplus in other categories of expenses. The project eventually was completed within the budget.