

RESEARCH OUTPUTS AND PUBLICATIONS

- <P002696> **高慕蓮、李子建.** <「中學中國語文科新課程試教計劃」：課程的實施個案研究>. 論文發表於新世紀的語文教育與語文教師培訓國際學術研討會, 主辦機構為華中師範大學、香港教育學院. 武漢, 中國, 2000.01.05.
- <P002738> **高慕蓮、郭懿芬、李子建、許守仁.** <以單元課程重組中國語文學習經驗的初步研究>. 《語文教育新動向: 一九九九年國際語文教育研討會論文集》周漢光、何偉杰、康寶文、樊善標編. 頁 57-71. 香港: 國際語文教育研討會籌備委員會香港中文大學教育學院香港中文大學中國語言及文學系, 2000.12.
- <P004118> **SHIU Lai Hung.** "Project Work - Introducing the Innovation in Class". Paper presented in the International Conference on Rejuvenating Schools Through Partnership, organized by the Faculty of Education, CUHK. Hong Kong, 2001.05.22.
- <P010538> **高慕蓮、李子建.** <「中學中國語文科新課程試教計劃」——實施的個案研究>. 《現代教育通訊》第 58 期, 頁 41-44. 香港, 2001.06.
- <P011463> **高慕蓮、李子建.** <《中國語文教學與思考教育：教學模式的初探究》論文>. 論文發表於《2001 中文科教學研討會》, 主辦機構為香港中文大學教育學院. 香港, 2001.06.02.
- <P011584> **趙志成、陳可兒、李子建、黃家聲、趙李婉儀、張月茜、陳建順、彭家潤、鄧惠欣.** <香港躍進學校計劃——學校改善模式>. 《香港躍進學校計劃資料冊——從「夢想」到「實踐」》頁 86. 香港: 香港中文大學教育學院, 2001.03.

see also <P002661>, <P002697>, <P010400>

RESEARCH PROJECTS

A Test Construction Support System for Chemistry Teachers

- ✉ CHEUNG Sin Pui • LEE Fong Lok • Wong Kwong Wai Raymond*
- ☐ 1 September 2000
- ❖ Quality Education Fund, HKSAR Government

Research has revealed that chemistry students often have misconceptions of chemical concepts even after teacher instruction. Although researchers have successfully identified students' misconceptions in a number of chemistry topics such as chemical bonding and electrochemistry, chemistry teachers in Hong Kong are generally unaware of these important research findings. The project aims at building a bridge across the gulf between researchers and school teachers by developing a computer-based support system called Test Construction Support System (TCSS). Secondary school chemistry teachers will be trained to use the TCSS to improve the quality of their classroom assessment and chemistry teaching. The TCSS is intended to provide a multimedia environment within which chemistry teachers can perform a number of tasks: to access information about student misconceptions reported by researchers; to learn general guidelines for construction of quality multiple-choice items; to practice how to construct effective multiple-choice items; to learn how information about students' misconceptions can be incorporated into the design of distractors for multiple-choice items; to generate a test paper automatically by the support system; and to allow students to self-assess their understanding of chemical concepts by interacting with an electronic test paper. The TCSS contents will be written in English. The system will be distributed to chemistry teachers in Hong Kong in the form of a CD-ROM, and it will also be put on the Internet so that the databases can be updated periodically. (ED20009)

Refining a Stage Model for Studying Teacher Concerns About Educational Innovations

- ✉ CHEUNG Sin Pui
- ☐ 1 November 2000
- ❖ CUHK Research Committee Funding (Direct Grants)

Many attempts at educational change fail. There are a lot of reasons why an innovation fails to be adopted or implemented by schools, but one important reason is that teachers' concerns about the advocated innovation are not monitored and addressed throughout the process of change. To assess

concerns of teachers adopting or implementing an innovation, Hall, George and Rutherford's (1977) 7-Stage Concern Model is probably the most well-known model found in the literature. However, research by Cheung, Ng and Hattie (2000) has demonstrated that the 7-stage simplex model does not fit real data. Consequently, Cheung (2000) measured a sample of teachers' concerns about school-based assessment in Hong Kong by an open-ended questionnaire and found that an additional stage of teacher concerns should be added. This research project builds upon the work done by Cheung (2000). The purpose of the research is to develop a Stages of Concern Questionnaire based on the new 6-stage model hypothesized by Cheung (2000) and to test whether the six stages of concerns really form a simplex structure. The concerns of Hong Kong teachers regarding school-based assessment as a component of the public examination system will be used as the context for research. (ED00315)

"Hong Kong Young Writer" Teaching Aid

- ✉ HO Man Koon • AU Pui Kuen*
- ☐ 1 July 2000
- ❖ Quality Education Fund, HKSAR Government

"The Hong Kong Star" project aims to provide computerized based editing Chinese composition service for Form 2 (F.2) students (checking on words and grammar).

Objectives: This software provides assistance in word usage after the composing process. Chinese writing to F.2 students in Hong Kong.

Targets: 40 F.2 students in Hong Kong

Methods: (1) to produce teaching compact discs based on theories on cognitive psychology. (2) to demonstrate the effectiveness of the software through studies on students.

Process: (1) An error analysis will be done on secondary school F.2 students' compositions. (2) A database will be compiled based on the characteristics of the Chinese lexicon, and theories in modern Chinese grammar and cognitive psychology. (3) Results on the studies will be publicized in public seminars. (4) A project report will be written.

Evaluation: The teaching effectiveness of the product can be guaranteed through studies and monitoring by experts and experienced language teachers. (ED20005)

A Pilot Scheme on Using Putonghua as a Medium of Instruction in Chinese Language Teaching

- ✉ HO Wai Kit • LAM Kin Ping Majors • CHEUNG Lai Yin (Faculty Office of Education) • YANG Huimin (Faculty Office of Education)#
- ☐ 1 August 2000

❖ Quality Education Fund, HKSAR Government

The objective of this research project is to investigate the application methods of Putonghua as a Medium of Instruction in Chinese Language Teaching in primary and secondary schools. There are approximately 30 primary and secondary schools participating in the scheme. The scheme provides training, teaching materials as well as consultancy service to the schools. In addition, it will assess the effectiveness of using Putonghua as a Medium of Instruction in Chinese Language Teaching through visits, questionnaires and tests. The research outcomes may serve as a reference for schools, curriculum developers and teacher trainers. (AL20003)

Quality Early-childhood Education for All (QEEA)

✉ LEE Chi Kin John • MA Hing Tong (Faculty Office of Education) • KO Mo Lin Regina (Faculty Office of Education) • CHEUNG Yuet Sai Louisa (Faculty Office of Education) • TSUI Hei Lai (Faculty Office of Education) • CHEUNG Tsui Man (Faculty Office of Education)

☐ 1 September 1999

❖ CUHK Departmental Funding

This pilot project is based on the successful experiences of Accelerated Schools for Quality Education (ASPQE) and other comprehensive school improvement projects and intends to realize the aims of quality education in the early childhood education sector. The project team establishes partnerships with five kindergartens and child care centers. Activities including capacity building through on-site consultation for curriculum development and school-based workshops, strengthening of school community through parental involvement, and school development through stock-taking would be conducted. (ED99063)

Early Childhood Environmental Education and Teachers Training

✉ LEE Chi Kin John • MA Hing Tong (Faculty Office of Education)

☐ 1 September 2000

❖ St. Joan of ARC School of Funding from Quality Education Fund

This project aims at helping kindergartens to develop school-based environmental education curricula as well as offering professional training and consultancy services to teachers. Principals and teachers from four kindergartens would be involved in curriculum development and professional training.

After implementing these school-based curricula, their activities and experiences would then be shared amongst other kindergartens. Evaluation through questionnaire surveys, observations and interviews would be conducted to capture and consolidate the lived experiences of implementation and perceptual outcomes of this project.

(ED20004)

University of School Partnership for Quality Education (USPQE)

✉ LEE Chi Kin John • CHUNG Yue Ping Stephen (Dept of Educational Administration & Policy) • LO Nai Kwai Leslie (Dept of Educational Administration & Policy) • WONG Hin Wah

☐ 1 September 2000

❖ Quality Education Fund, HKSAR Government

The project aims at fostering a university-school partnership and provides a school improvement model for schools to refine their self-renewal and self-evaluation capacities, and for key stakeholders to work together to enhance the quality of education. It focuses on basic education and attempts to address special school improvement. The objectives of the project are:

- (1) to assist school community members to develop teaching activities, school-based curricula and programmes which help realise the aims of education (to enjoy learning, to enhance effectiveness communication, to develop creativity, and to foster a sense of commitment);
- (2) to help school principals and teachers develop the capacity to identify their own unique challenges, search out solutions, develop action plans, implement these plans and continually evaluate the outcomes;
- (3) to enable school students to develop more positive attitudes towards learning and themselves as well as more positive feelings towards the school, gain more varied learning experiences and enhance their own performance;
- (4) to identify and help schools to reach out to community education resources for quality education; and
- (5) to establish a university-school partnership model in the context of Hong Kong. The project involves full-time school development officers who run school-based and school-wide workshops, assist school participants to engage in school-based inquiry and facilitate school community members to initiate and sustain educational changes.

(ED20008)

Partnership Development Project

✉ LEE Chi Kin John • CHUNG Yue Ping Stephen (Dept of Educational Administration & Policy) •

LO Nai Kwai Leslie (Dept of Educational Administration & Policy) • WONG Hin Wah • CHEUNG Tsui Man (Faculty Office of Education) • CHEUNG Wai Chun (Faculty Office of Education) • KO Mo Lin Regina (Faculty Office of Education) • MA Hing Tong (Faculty Office of Education) • TANG Yiu Nam (Faculty Office of Education) • CHEUNG Yuet Sai Louisa (Faculty Office of Education) • PANG Sun Keung Nicholas (Dept of Educational Administration & Policy) • TSANG Wing Kwong (Dept of Educational Administration & Policy)

- 1 September 2000
- ❖ Education Department, Hong Kong SAR Government

The project aims at complementing the Quality Assurance Inspectorate (QAI) proceeded by Education Department, HKSAR. The collaboration between the Centre for University & School Partnership and the Quality Assurance Inspectorate would undergo two models:

- (1) To help schools, which has not undergone quality assurance inspection, identify their own problems, propose recommendation measures and enhance their own readiness for school improvement as well as the QAI's follow up actions (Model A);
- (2) To help schools, which has undergone quality assurance inspection, follow up and focus on QAI recommendations or suggest alternative implementable recommendations as well as enhance their own readiness for school improvement as well as QAI's follow-up actions (Model B).

(ED20014)

An Investigation into the Attitudes of Pre-service and Serving Teachers of English Towards the English Language Proficiency Assessment and Their Language Needs in the Training Courses

- ✉ MAK CHAN Shuk Yin
- 1 November 2000
- ❖ CUHK Research Committee Funding (Direct Grants)

This study aims at investigating the attitudes of pre-service and serving teachers of English towards the establishment of minimum English language standards in Hong Kong. It also tries to solicit teachers' views on the test and task types included in the English Language Proficiency Assessment. A further aim of the study is to identify the language needs of these teachers. It is hoped that findings could contribute to the design of language training course so that teachers and in turn, the community at

large, can benefit from these courses and the benchmark initiative.
(ED00415)

中學實施中國語文科「試行課程——共同發展學習材料」計劃校內改變研究

Research on Major Changes at the School Level in Parallel to the Launching of "Curriculum Tryout-Collaborative Learning Material Development" Scheme

- ✉ 黃顯華 WONG Hin Wah • 周漢光 CHOW Hon Kwong • 何偉傑 HO Wai Kit • YEUNG Kwai Hong*
- 1 June 2001
- ❖ Education Department, Hong Kong SAR Government

研究範圍：

〈一〉自 1999 年 9 月至 2002 年 8 月，教育署實施中文科「試行課程—共同發展學習材料」計劃（以下簡稱「本計劃」或「本課程」）以來，教師在下列各方面的轉變：

- (1) 在知識、技能、態度、工作習慣、和文化等專業發展；
- (2) 在課程發展和教學等工作；假如是科主任或科目協調員，他們在上述各方面的領導角色；
- (3) 在發展校本課程和教材時，他們處理困難的方法和態度。

〈二〉比較沒有參與和有參與本計劃的教師在上述各方面的表現有甚麼分別？

〈三〉在實施本計劃期間，參與本計劃學校的學生在下列各方面有甚麼改變？學習環境；學習經驗；學習動機和興趣。

〈四〉在適應或／和促進本課程改變時，教師在參與本計劃不同階段時有什麼不同需要？

〈五〉在實施本計劃期間，學校、政府和有關機構提供了什麼支援？

〈六〉上述支援有什麼效果？

〈七〉學校參與本計劃後出現不同程度發展的原因是什麼？

〈八〉上述研究的發現對下列各方面的未來方向、策略、和模式等有什麼啓示？並藉此對短期和長期的發展應作出什麼建議？

- (1) 中學中文科課程和教材的發展；
- (2) 制度／中央和學校各層面的課程革新。

研究設計、方法和對象：

本研究採取多種研究方法，包括文件分析、問卷、訪問、課堂觀察、教師反思紀錄、學校個案研究、和專家研討等；並以多種理論為根據，整理和設計研究工具，以了解上述八項研究問題的實在狀況。研究對象包括學生、教師、科主任、校長、教育署專家、課程發展委員會委員、及語文教育專家等。

(ED00400)

Courseware Building on the World Wide Web (WWW)

- ✍ WU Kam Wah
- ☐ 1 November 2000
- ❖ CUHK Research Committee Funding (Direct Grants)

With the World Wide Web (WWW) (or the Web) offering connectivity to myriads of information sources, its use for obtaining learning materials can never be over-estimated. However, the inherent complexity of the information and services available also makes the goal of automating routine WWW behaviour for courseware building formidable.

This project looks at these issues for WWW operations for authoring. More specifically, the project aims:

- (1) To formulate an appropriate strategy for Web search result;
- (2) To develop an architecture to enable searching relevant materials in an integrated manner;
- (3) To build demo courseware from a pool of pedagogically relevant materials with different goals and backgrounds on the Web to demonstrate the viability of what will be proposed in the project.

(ED00440)

Information Technology (IT) in Education Showroom Phase (I): Representational and Presentational Dimensions

- ✍ WU Kam Wah
- ☐ 1 March 2001
- ❖ CUHK Research Committee Funding (Direct Grants)

Information Technology (IT) in education is now a trend irresistible and irreversible. Given most are still vague on what constitute IT in Education, the most imminent and viable treatment of the issue is to devise some well demonstratable, feasible and practicum approach towards the problem.

This project tackles squarely at this issue of IT in Education. More specifically, the project aims:

- (1) To collect various possible cases for IT in Education.
- (2) To probe into the various representation and presentation dimensions for IT in Education and experiment on them so as to let IT in Education feasible and demonstratable.

(ED00938)

Heroes and Heroines in the History of Hong Kong and Modern China: Voices of Hong Kong Teenage Students

- ✍ YEUNG Sau Chu Alison
- ☐ 1 March 2001
- ❖ CUHK Research Committee Funding (Direct Grants)

The project aims to re-think the direction of history education and to rejuvenate the classroom teaching of Chinese history in Hong Kong junior secondary schools. It will provide us with empirical evidence for a more grounded discussion on the role of Chinese history in the transmission of political knowledge and formation of national identity, which was resulted from the holistic review of school curriculum proposed by the Curriculum Development Council in Oct 1999.

Based on a belief that students are interested in how the present-day Hong Kong has been evolved from a fishing village in the last hundred year, this project has designed an innovative junior secondary Chinese history curriculum framework for experimentation in a collaborating school. The S1 curriculum will focus on how historical figures shaped the course of history of Hong Kong and modern China. The S2 curriculum will trace the origins of civilization through archaeological finds. S3 curriculum will work with the notion of change and continuity in imperial China. The experimentation will contribute to further discussion and wider dissemination of alternative approaches to Chinese history. This school-based Chinese history curriculum also includes activities so that the voices of S1 students on how they understand the historical figures crucial to the history of Hong Kong and Modern China can be taped.

(ED00570)

Please refer to previous issues of this publication for more details of the following ongoing research at the department:

<u>Edition</u>	<u>Title/Investigators</u>
1999-00	Developing a Model of Teacher Concerns About School-based Assessment (ED99012) ✍ CHEUNG Sin Pui
1997-98	中國近代及現代教育社團研究 Research on Educational Communities in Modern and Contemporary China (ED97017) ✍ 周漢光 CHOW Hon Kwong • ZHOU Hong Yu*
1999-00	The Development of Secondary Students' English Language Abilities in Listening and Grammar in English Medium of Instruction Schools in Hong Kong: A Longitudinal Study (ED99001)

	TSUI Hei Lai (Faculty Office of Education)	Analysing Students' Responses to Open-ended Questions (ED99044) ✍ WONG Ngai Ying • LAM Chi Chung
1998-99	A Knowledge-based Multimedia Learning System for Primary School Students (CU98196) ✍ LEE Fong Lok	1999-00 Curriculum Integration of Chinese History and World History in Hong Kong Junior Secondary Schools: A Comparative Approach (ED99015) ✍ YEUNG Sau Chu Alison
1999-00	Development and Research Project on 'Motivation and Model of Learning Among Primary School Pupils in the Subjects of Chinese Language, English Language and Mathematics' (ED99061) ✍ WONG Hin Wah • CHUI Ching Ying • YEUNG Chi Kwan • SZE Man Man Paul • MAN Yee Fun Evelyn • LEUNG Shuk Kwan Susan# • LEE Chi Kin John	1998-99 A Contrastive Study of Difficult Characters' Pronunciation in Mandarin and Cantonese (AL98020) ✍ YU Nae Wing
1999-00	Enhancing of Students' Mathematics Problem Solving Ability by the Systematic Introduction of Variations: Development of a Framework for	1999-00 由部首檢字引論中國文字的結構及派生方法 The Structure of Radical in Chinese Word Families (AL99031) ✍ 余迺永 YU Nae Wing

RESEARCH OUTPUTS AND PUBLICATIONS

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- <P985019> **李芳樂.** 〈虛擬校園—互聯網上課內學習及課外活動中心〉. 論文發表於二十一世紀校外教育的定位與發展研討會, 主辦機構為香港宋慶玲少年官 香港, 1998.06.
- <P990425> **Lee, Fong-Lok、黃家鳴、譚達生.** <在小學數學中使用錨式教學軟件>. 論文發表於攜手共進: 實施目標為本課程之道, 校本課程的教、學和評估研究會, 主辦機構為香港教育署. 香港, 1998.07.09.
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- <P001328> **Wong, Ngai-Ying.** "Investigating Conceptions of Mathematics by the Use of Open-Ended Mathematical Problems". Paper presented in the 9th International Congress of Mathematics Education, organized by International Commission on Mathematics Instruction. Tokyo, Japan, 2000.08.
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see also <P002227>, <P002696>, <P002738>, <P003803>, <P007823>, <P010399>, <P010538>, <P011463>, <P011584>, <P016167>, <P996361>

RESEARCH PROJECTS

The Organization for Economic Cooperation and Development (OECD) Programme for International Student Assessment (PISA): The Hong Kong Pilot Study

- ✉ HO Sui Chu
- ☐ 1 November 2000
- ❖ CUHK Research Committee Funding (Direct Grants)

OECD Programme for International Student Assessment (PISA) is a new regular survey of 15-year olds assessing their preparedness for adult life. The purpose of the Hong Kong pilot study is to conduct the preliminary steps on the development of a longitudinal database for the study of several problems confronting the youth in Hong Kong secondary schools. Specifically, the study will address problem concerning students basic knowledge and skills in reading, mathematics and science, school segregation, school bullying, home and school collaboration, and decentralization policies.

The study will parallel the first cycle of PISA study conducted by the OECD in thirty-two countries in 2000. This international study can extend our knowledge on the effectiveness of Hong Kong basic education by establishing a timely, longitudinal, and multilevel database. The full project can provide direction for schools instructional efforts and for students' learning as well as insights into curriculum strengths and weaknesses. They also provide tools for central authorities to monitor achievement levels especially when administration is devolved and schools are being run in partnership with communities.

The funds requested in this application are for a pilot study to accomplish the following steps: (1) construct the sample design, including acquiring permission to the school principals, teachers, students and their parents; (2) piloting of questionnaires (3) field test the student questionnaire and assessment in five schools; and (4) explore the possibility of merging the student questionnaire data with other data bases on student achievement. With these experiences of analyzing international database of TIMSS and NELS, the researcher was invited to participate in the first PISA meeting in early October 2000 to discuss her current work and this proposal. The staffs from OECD have indicated interest to provide technical and consultative support. (ED00849)

The Hong Kong-PISA Project: Monitoring the Quality of Education in Hong Kong from an International Perspective

- ✉ HO Sui Chu • CHUNG Yue Ping Stephen • TSANG Wing Kwong • CHUN Ka Wai Cecilia (Dept of Curriculum & Instruction) • SZE Man Man Paul (Dept of Curriculum & Instruction) • YIP Din Yan (Dept of Curriculum & Instruction) • MAN Yee Fun Evelyn (Dept of Curriculum & Instruction) • CHIU Ming Ming (Dept of Educational Psychology) • WONG Ka Ming* • HO Wai Kit (Dept of Curriculum & Instruction)
- ☐ 1 November 2000
- ❖ Quality Education Fund, HKSAR Government

Monitoring the quality of education by tracking students' achievement is a major issue in the current education reform. Program for International Student Assessment (PISA) is an international assessment of the skills and knowledge of 15-year-olds conducted by The Organization for Economic Cooperation and Development (OECD) in thirty-two countries. It aims to assess how far students approaching the end of compulsory education have acquired the knowledge and skills that are essential for full participation in study, work, and society. Implementing PISA in Hong Kong allows creation of a new monitoring system from an international perspective. The proposed project will parallel the first cycle of the PISA study. This international study can extend our knowledge on the effectiveness of Hong Kong basic education by establishing a timely, longitudinal, and multilevel database.

The objectives of the project are:

- (1) include Hong Kong in the network of international student assessment projects;
 - (2) promote collaboration among governments on assessment policy;
 - (3) monitor students' achievement in reading, mathematics and science;
 - (4) investigate the effectiveness of basic schooling;
 - (5) provide a baseline profile of the knowledge and skills of Hong Kong students at the end of compulsory education;
 - (6) report results of education system's quality; and
 - (7) train education evaluators and practitioners in monitoring school performance.
- (ED20023)

Estimating the Cost of Class Size Reduction in Secondary Schools in Hong Kong Under Different Class Size Alternatives

- ✉ HUNG Fan Sing
- ☐ 1 March 2001
- ❖ CUHK Research Committee Funding (Direct Grants)

The purpose of this project is to provide estimates of the operational and capital costs of implementing class size reduction (CSR) in public-sector secondary

schools in Hong Kong. Specifically, the project will estimate the quantity of additional classes required, the additional operational costs, and the additional capital costs for the reduction of class size in Forms 1-5 to three class size alternatives, i.e. a maximum of 38, 36, or 34 students permitted in each class, in one of the following years from 2001-2002 to 2010-2011. Reducing class size seems to be an increasing concern of teachers since this measure is believed to release teachers' more time and effort to deal with learning of individual students better. However, reducing class size is very costly as compared with other alternatives to improve student achievement, such as school restructuring, school reallocation of resources, and school-based management reform. Whether reducing class size is a good policy in addressing student achievement improvement requires a full accounting of its costs and benefits, including a comparison with alternative policies. Based on these data, the researchers will be able to assess the cost-effectiveness of class size reduction by comparing with its benefits to be estimated, and also to compare its cost-effectiveness with other policy alternatives in improving student achievement. Further, the project will highlight the future fiscal commitments on the part of the society and/or government in the coming decade. (ED00574)

External Environment and School Organizational Learning

- ✍ LAM Yee Lay Jack
- ☐ 1 September 2000
- ❖ Research Grants Council (Earmarked Grants)

The objective of this research is to chart a relatively unexplored domain: the relationship between environmental changes and schools' organizational learning. In response to the accelerated change in the political, economic, social and cultural sectors of society, educational reforms, initiated by governments in many parts of the world, call for major realignment of school systems and reorientation of educators. Existing empirical evidence suggests that in face of external changes, individual educators' coping strategies are not deficient in innovativeness nor are they carelessly executed. On the other hand, they are primarily role-specific and self-centered in a loosely coupled system as education. Inevitably, these uncoordinated reactions to external pressure engender much internal tension and dissension.

Alternative to the fragmented and highly politicized approach is a concerted response pattern cemented painstakingly over time from individuals and groups that transfer their learning and acquired wisdom into the school's organizational repertoire. Through the institutionalization of individual and team learning and the dissemination of results to the entire

organization, school organizations may achieve rationalization of responses to external threats and stabilization of the political realignment within the organization.

Organizational learning processes, as responses to the environmental constraints, are nurtured by ideal internal school conditions, notably in terms of transformational leadership, collaborative school culture and decentralized structure. Precisely how each of these conditions promote organizational learning in different contextual situations, and how they niche together to provide the optimal circumstances for organizational learning to take root remain the focal points of investigation for this project.

(CU00368)

A Comparative Study of External Environment and Canadian School Organizational Learning

- ✍ LAM Yee Lay Jack
- ☐ 15 November 2000
- ❖ CUHK Research Committee Funding (Direct Grants)

As an extended study of the principal investigator's summer research grant and his recent RGC grant looking into the relationship between external environment and school organizational learning, the present project attempts to further clarify the intricate relationship between the two in the Canadian setting. Throughout the past efforts, the present principal investigator has accumulated a rich and important cross-cultural pool of data, containing comparable data from Taiwan, Australia, and Hong Kong. The sample to be collected from the present project will constitute the last set in formulating the basis for proposing some universal phenomena reflecting the public schools' capability of coping and surviving in different socio-cultural setting when confronted with comparable challenges brought about by education reform. As well, differential internal working conditions such as leadership, school cultural norms and structure will be scrutinized and compared. Their relative impact on the collective learning process in school will be examined.

(ED00867)

School Self-evaluation and School-based Performance Indicators

- ✍ PANG Sun Keung Nicholas
- ☐ 1 July 2000
- ❖ Quality Education Fund, HKSAR Government

The project aims to help schools to (1) develop their own models of school-based management in the spirit of the recommendations of Education Commission Report No.7; (2) institutionalize a self-evaluation

framework in daily practices for continuous improvement; and (3) develop their own sets of school-based performance indicators for use in school self-evaluation. A sample of 10 primary schools and 10 secondary schools will take part in this project. A normative-re-educative strategy will be used to initiate changes in the schools, that is, a user-centred, bottom-up approach to school reform in order to establish a climate of change and to cultivate a quality culture in the participating schools. In the improvement project all teachers in a school are allowed to participate in shaping the reform by identifying their own needs, assessing the school's present conditions and performance and formulating the school development plans.

The project will benefit the participating schools in the following ways:

- (1) a self-renewal strategy will be institutionalized in the schools for continuous improvement through establishing a self-evaluation framework and using school-based indicators;
- (2) administrators' and teachers' professional competence, confidence and performance will be promoted through a series of training courses well designed for them;
- (3) students' school lives and learning will ultimately be benefited when school effectiveness is improved and when a quality culture is fostered;
- (4) the schools will be more accountable to parents and the wider community when the self-evaluation process leads to annual reports containing fair, reliable and objective information about the schools.

(ED20001)

A Study of the Motivational Structure of Primary Schools in Hong Kong

✉ TAM Wai Ming Frank

☐ 1 November 2000

❖ CUHK Research Committee Funding (Direct Grants)

Since the implementation of compulsory education in Hong Kong in 1975, the Hong Kong Government has been taking the responsibility of financing public sector education, from primary school up to university. According to the statistics provided to the public, there are over 22,000 teachers serving in Government, Aided and private primary schools. Remuneration and up-grading of teachers have taken up a significant portion of the Government's expenditure in education. As one of the measures to upgrade the teaching force in primary schools, the Government accepted the Education Commission's recommendation in its Report No. 5 in 1992 that about 35% of the primary school teaching posts should be upgraded to graduate level by 2007. Later, this target date was further advanced to 2002 in the

1997 Policy Address. This policy is deemed to have significant effect in attracting qualified candidates to join the teaching force and motivating the existing teachers in the primary schools, but it has also been criticized as being piecemeal and narrow in scope. The purpose of the present project is to study the motivational structure of primary teachers in Hong Kong and find out how their personal characteristics, the existing monetary incentives, staff development policies, organizational factors, etc., have contributed to the effectiveness of their work.

(ED00550)

Consultancy Study on the Promotion of Parent Education

✉ TAM Wai Ming Frank • CHENG Hon Man Roger • HO Sui Chu • LAM Ching Man (Dept of Social Work) • MA Lai Chong (Dept of Social Work)

☐ 1 April 2001

❖ Education Department, Hong Kong SAR Government

Understanding that parents are the earliest and closest mentors of their offspring and that their views, values and attitudes would produce great impact on children's development, promoting parent education has been accorded high priority by the Hong Kong SAR Government. The emphasis of the education reform on cultural changes and parental participation accentuates the urgency of the task.

The (present) study is conducted to obtain information to make recommendations to the government on the contents, direction, policy of parent education as well as the mechanism to bring all community resources together for its promotion.

The objectives of the study are as follows:

- (1) To take stock of how parent education is promoted in Hong Kong at present;
- (2) To find out the underlying rationale and focus of the organizations providing parent education in Hong Kong at present;
- (3) To find out the needs of parents with offspring from 0 to 15 years of age for parent education, including the contents, format, timing, arrangement, etc.;
- (4) To look for effective practices in neighboring countries which are adaptable in Hong Kong; and
- (5) To make recommendations, based on the findings of the study, on the contents, direction, policy of parent education as well as the mechanism to bring all community resources together for its promotion.

(SS20015)

Principalship Development Through Assessment - Needs Assessment for Newly Appointed Principals

- ✍ WALKER Allan David • LEUNG Seung Ming (Dept of Educational Psychology)
- ☐ 1 September 2000
- ❖ Education Department, Hong Kong SAR Government

This project aims to further develop and institutionalise the project "Needs Assessment for Principals (Hong Kong) [NAFPhk]" for newly appointed principals within the context of school-based management and school improvement. The first phase of the project involved the development of assessment mechanisms and accompanying organisational structure, and the conduct, trialing and evaluation of an innovative needs assessment mechanism for newly appointed principals. It also involved the establishment of a close professional relationship between practising principals, the Education Department and academics and the training and involvement of a group of assessors drawn from the ranks of experienced principals. The project was viewed as a positive step toward handing greater control of their own professional development to principals themselves. This project aims to continue, refine, organise, apply and further evaluate the NAFPhk process. Participation in the needs assessment exercise will be an extremely worthwhile professional development exercise for all involved and will cement the strong tripartite relationship established between the Education Department, the developers and organisers and practising principals. The project aims to establish a research base on the beliefs and needs of school leaders in Hong Kong and to form the basis for original and ongoing research. (ED20021)

Structured Needs Assessment and Development for Hong Kong School Principals – Group 2

- ✍ WALKER Allan David • LEUNG Seung Ming (Dept of Educational Psychology)
- ☐ 1 October 2000
- ❖ Education Department, Hong Kong SAR Government

The project aims to develop, trial and implement a practical needs assessment package for aspiring, newly selected, newly appointed and practising (new and experienced) school principals in Hong Kong as they accept the challenge of school-based management and school improvement. Participation in the needs assessment exercise will provide principals with a comprehensive assessment of their current stage of development and, as such, allow them to plan a meaningful and relevant approach to their professional development. Aggregated data will be valuable to professional development providers in conceptualising and planning relevant professional development for principals at different stages of their

career and development. Participation in the needs assessment exercise will, in itself, be an extremely worthwhile professional development exercise for those involved. (ED20015)

Education and Work: The Efficacy of Schooling on Human Resource Development in Three Regions in China

- ✍ XIAO Jin • CHUNG Yue Ping Stephen • LEE Chi Kin John (Dept of Curriculum & Instruction) • LO Nai Kwai Leslie • WONG Hin Wah (Dept of Curriculum & Instruction)
- ☐ 1 October 2000
- ❖ Research Grants Council (Earmarked Grants)

Understanding the roles of pre-job education, on-the-job training (OJT) and adult education (AE) is a critical component of public policy discussion, because providing the skills and abilities demanded by a changing economy in an effective and responsive way is a challenge for most educational systems in the world. Formal education has long been relied on to meet society's needs. In recent years, adult/non-formal education has provided educational opportunities beyond formal schooling. Increasingly, its mission has been to transform the workforce according to the needs of changing economies. In the quest for rapid development, China has adopted a dual-approach to educational development, relying on the strengths of both formal schooling as well as non-formal education in order to improve the quality of the workforce. This research project will examine the roles of pre-job formal schooling and such non-formal/non-government financed education as OJT and AE, in meeting the skill and ability demands needed for development of China's changing economy. (CU00379)

Please refer to previous issues of this publication for more details of the following ongoing research at the department:

<u>Edition</u>	<u>Title/Investigators</u>
1999-00	Categorisation of Qualities of Educated Persons Through the Inquiry into the Chinese Qualitative Terminology Employed by Secondary School Teachers in Their Self-Appraisal: A Pilot Study (ED99016) ✍ CHENG Hon Man Roger
1998-99	Making Home-School Collaboration Work: In Search of Success Indicators and Practices (ED98022) ✍ HO Sui Chu • TSOI Lai Yuen Sum, Susanna*

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| <p>1999-00 Parental Roles in Students' Learning of Mathematics: A Cross-cultural Comparison (ED99018)
 著 HO Sui Chu • WONG Ngai Ying (Dept of Curriculum & Instruction)</p> <p>1999-00 Enhancing Problem Solving Skills to Improve School Performance (ED99002)
 著 LAM Yee Lay Jack</p> <p>1997-98 Managerial Practices and Organizational Cultures of Schools in Shanghai (ED97021)
 著 PANG Sun Keung Nicholas • WU Chi Hung*</p> <p>1998-99 Hong Kong Voters in the 1998 Legislative Council Election: A Survey of the Voting Behavior in the HKSAR (CU98199)
 著 TSANG Wing Kwong • LEUNG Sai-Wing* • SHUM Kwok Cheung (Hong Kong Institute of Asia-Pacific Studies)</p> <p>1999-00 Evaluation on the Implementation of the Medium of Instruction Guidance for Secondary Schools (ED99008)
 著 TSANG Wing Kwong • CHEUNG Sin Pui (Dept of Curriculum & Instruction) • CHUN Ka Wai Cecilia (Dept of Curriculum & Instruction) • HO Wai Kit (Dept of Curriculum & Instruction) • HUNG Fan Sing • LEE Chi Kin John (Dept of Curriculum & Instruction) • LO Nai Kwai Leslie • WONG Hin Wah (Dept of Curriculum & Instruction) • YIP Din Yan (Dept of Curriculum & Instruction)</p> | <p>1999-00 A Review of Quality Education Reforms in Hong Kong: Progress and Limitations (ED99046)
 著 TSE Kwan Choi</p> <p>1999-00 The Representation of Citizenship in Chinese Societies: A Comparative Study of Social Subjects at Primary Level in Mainland China, Taiwan, Hong Kong & Macau (ED99047)
 著 TSE Kwan Choi</p> <p>1998-99 Development of a Cross-Cultural Framework and Accompanying Instrumentation for Comparative Analysis in Educational Administration (CU98327)
 著 WALKER Allan David • DIMMOCK Clive# • PANG Sun Keung Nicholas</p> <p>1999-00 Developing a Hong Kong Principal's Leadership Profile (ED99017)
 著 WALKER Allan David</p> <p>1997-98 Alternative Training Paths for Human Resource Development: A Reverse Tracer Study of Manufacture and Service Sectors in Shanghai, China (CU97210)
 著 XIAO Jin • LO Nai Kwai Leslie</p> <p>1999-00 Preliminary Analysis of Firm Data Collected Through "1998 Pilot Study for Education and Work: The Efficacy of Schooling in Human Resource Development in Three Regions in China" (ED99020)
 著 XIAO Jin</p> |
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see also <P002721>, <P002887>, <P003858>, <P011554>

RESEARCH PROJECTS

Assessing Characteristics and Needs of Gifted Students: Perspectives from Students, Their Peers, Parents, and Teachers

✉ CHAN Wai Ock David • CHENG Pui Wan • CHEUNG Ping Chung • Yung Ka Kui* • Chan Lai Kwan*

☐ 1 September 2000

❖ Quality Education Fund, HKSAR Government

This research project rests on the assumption that a sound knowledge base is necessary for gifted programming to develop gifted students' high potential into high performance, and that efficacious services require taking into consideration multiple perspectives from students, parents, and teachers, and a strong commitment in home-school collaboration. Thus, this project aims to achieve the following:

- (1) To assess the characteristics of intellectually gifted students through self-reports of gifted students and interviews with teachers, parents and peers;
 - (2) To evaluate their service needs and perceptions of classroom and home environments in association with their profiles of strengths and weaknesses;
 - (3) To investigate factors associated with achievement, leadership abilities and creativity;
 - (4) To suggest actions for reversing underachievement, nurturing creativity and developing leadership; and
 - (5) To provide baseline data for future follow-up studies on gifted students' talent development into eminence.
- (ED20011)

Indication and Prevention of Aggressive and Withdrawn Behaviours in Primary School Children

✉ CHANG Lei • MCBRIDE Catherine Alexandra (Dept of Psychology)

☐ 1 January 2001

❖ Quality Education Fund, HKSAR Government

The purpose of this study is to:

- (1) classify different types of withdrawn and aggressive behaviors in Hong Kong elementary school children so that such a profile can be used to guide future intervention efforts beyond the period of this study;
- (2) identify behavioral as well as etiological correlates of these social-emotional problems and use indicators to monitor children's peer relationship and affect development for an

extended period of time beyond the completion of this study; and

- (3) develop and implement a social skills training program for anxious withdrawn boys who are most vulnerable to falling victims of school bullying and aggression. If successful, the training will continue after the completion of this study.

(SS20005)

An Electronic Version of the Wallach-Kogan Creativity Tests

✉ CHEUNG Ping Chung

☐ 31 July 2000

❖ Quality Education Fund, HKSAR Government

This project aims at developing an electronic version of the Wallach-Kogan Creativity Tests (WKCT) for convenient and efficient assessment of children creativity. It is to be completed in two years by two stages. Stage one is on Instrumentation, and the focus is on designing and pilot-testing an electronic version of the WKCT. Stage two is on School-Wide Implementation of creativity assessment with the WKCT in 10 primary schools and 5 secondary schools.

(ED20003)

Classroom Studies of Group Processes: How do the Problem Solving Processes of Successful and Unsuccessful Groups Differ?

✉ CHIU Ming Ming

☐ 1 November 2000

❖ CUHK Research Committee Funding (Direct Grants)

What helps productive group work? What hinders it? Researchers have argued that a group's structure, training and processes affect the group's outcome(s). Group structure (e.g., group size and problem type) and group training (e.g., to improve group commitment) have received more attention as they are relatively easier to measure.

This study will analyze how different group processes during cooperative learning (CL) affect outcomes. Specifically, do cognitive and social-emotional process variables affect: (a) solution scores, (b) correctness of later actions, and (c) cooperation during later actions?

About 200 students in 6 primary school classes in 2 schools will study fractions in CL groups for a week. The structure of group work sessions and the training of participants will be optimized based on past studies. Thus, only group processes are allowed to differ. Videotapes of the CL groups will be transcribed and coded. Group process variables will be captured within a three-dimensional framework of

(a) evaluations of one another, (b) knowledge content, and (c) invitation to participate. Statistical analyses and case studies will be used to document the relationships between process variables and outcomes, and among the process variables themselves.

Studies of group processes have been statistically problematic. Difficulties include binary dependent variables, group-specific effects, time period-specific effects, serial correlation and systems of equation problems. This study introduces a new methodology that will address all of these difficulties - multivariate multi-level Probit/Logit with time series methods. The results will help build a systematic understanding of CL processes and eventually help people work together more productively.

(ED00459)

Metaphorical Reasoning in Mathematics: Novices and Experts Solving Negative Number Problems

✍ CHIU Ming Ming

☐ 1 March 2001

❖ CUHK Research Committee Funding (Direct Grants)

Most educational researchers agree that humans construct new ideas from prior knowledge resources rather than simply receiving information. This process often requires a complex coordination of neurological processing, intuitions, schemas and metaphors. This study focuses on the last component, metaphorical reasoning.

This pilot study examines which metaphors novices and experts use and how they use them to understand and solve problems with negative numbers. If experts continue using the same metaphors that novices use, these metaphors are candidates for theory-constitutive metaphors. Furthermore, this study also documents the participants' metaphorical reasoning *processes* in addition to their *outcomes*.

Forty participants (twenty middle school children and twenty post-secondary adults) computed arithmetic expressions during a problem-solving task and explained six arithmetic expressions during the understanding task. The data has been collected. Summary statistical analyses and qualitative open and axial analysis will generate initial hypotheses. These hypotheses include the following: How do people use metaphors? How do their metaphors interact? Do novice and expert metaphors differ? Do their uses differ? Do the relationships among their metaphors differ? How does metaphorical reasoning change over time?

By specifying these hypotheses in sufficient detail, the researcher can test them on a larger project's data with dynamic multilevel analyses.

(ED00588)

Implementing a Career Guidance and Counselling Programme in Secondary Schools

✍ LEUNG Seung Ming • LAU Siu Ying Patrick • Chan Po On Ella* • Leung Kin Man Thomas*

☐ 1 September 2000

❖ Quality Education Fund, HKSAR Government

This project is aimed at achieving four major objectives. First, a set of career-related exploration exercises and assessment materials will be developed to assist secondary students to make informed decisions regarding their future educational plans and choice of occupations. Second, teachers from five secondary schools will be trained in the use of these exploration exercises and assessment materials for students in their classes. Third, students in the selected school will be given the opportunity to participate in a career guidance and counselling programme in which the exploration exercises and assessment materials will be used. Fourth, the reliability and validity of the assessment materials, as well as the effectiveness of the career guidance programme, will be examined. Ways to improve the exploration activities, the assessment materials, and the career guidance will be identified.

(ED20012)

Relations of Preferential Processing Modes to Intra-individual Decalages in Cognitive Development

✍ NI Yujing

☐ 1 April 2001

❖ CUHK Research Committee Funding (Direct Grants)

The structural model of cognitive development assumes the invariant developmental sequence in each and every individual and the structural invariance of intellectual functioning for an individual across situations. The difficulty of the structural model is the inability to account for the large inter-and intra-individual variability, that is more often the rule than the exception of cognitive development. The proposed study is to investigate whether and how part of the inter-and intra-individual variability can be accounted for by individuals' preferential information processing mode, propositional or analog, in a structurally meaningful way. Particularly, the study is:

(1) to examine relations of the differential information processing modes to different decalages for different individuals (P.3 and P.4 children) in performing cognitive tasks,

(2) to examine whether the differential processing modes represent an individual disposition, a transitory facet of cognitive development, in an orthogonal relation to general cognitive competence, or different profiles of underlying abilities subordinate to general cognitive competence, and

(3) to look for convergent evidence for the contrasting preference of propositional vs. analog mode of information processing as a differential factor contributing to different developmental pathways of individuals.

Results of the proposed study will provide new evidence regarding whether and how we can explain individual diversity in cognitive development in a structurally meaningful way. Different conceptions of cognitive development as well as conceptions of individual differences will have implications for how learning environment should be structured to help children become more effective learners. (SS00517)

Control Processes in Chinese Students' Academic Pursuit: A Study on Developmental Regulation Before and After a Deadline

✉ WONG Wan Chi • Prof. Shen Ji Liang* • Prof. Jutta Heckhausen*

☐ 1 January 2001

❖ CUHK Mainline Research Scheme

Echoing the recent theoretical development of the life-span theory of control (Heckhausen, 1999) and the reality of the changing contemporary Chinese society, the present study proposes to tackle three problems:

- (1) to render empirical scrutiny to Heckhausen's theoretical formulation on control processes around a deadline;
- (2) to examine the universal claim of the OPS model (The model of optimization in primary and secondary control); and
- (3) to unveil the patterns of control processes among Chinese students in the domain of academic achievement.

A new instrument, named as OPSAA (Optimization of Primary and Secondary Control in Academic Achievement), has been constructed. It contains 30 items which are equally distributed into 6 subscales. The main study will be applied to students preparing for the University Entrance Examination (N=500) and the TOEFL (N=500) in year 2001. The OPSAA will be distributed both in the predeadline situation (i.e., before the commencing date of the examination) and in the postdeadline situation (i.e., after the announcement of the results). In the predeadline situation, open-ended questions on developmental goals as well as the probability and significance of their attainment will be further explored. Additional questions on the perceived success/failure, attributional style, subjective well-being, and life satisfaction will also be raised in the postdeadline situation. Findings may serve as a cornerstone for future research on three lines:

- (1) longitudinal follow-up on the control processes;
- (2) replication studies in varied Chinese communities; and

(3) empirical studies applied to varied age groups in different Chinese ecological settings. (SS20007)

Please refer to previous issues of this publication for more details of the following ongoing research at the department:

<u>Edition</u>	<u>Title/Investigators</u>
1999-00	Development an Instrument to Assess the Emotional Adjustment of Gifted Students (ED99048) ✉ CHAN Wai Ock David
1998-99	The Development and Psychometric Evaluation of a National Standardized Putonghua Test (CU98047) ✉ CHANG Lei • HAU Kit Tai
1999-00	Correlates of Bullying and Victimization Among Primary School Children in Hong Kong and China (ED99021) ✉ CHANG Lei
1999-00	Aggression, Withdrawal, and Communication Styles of Middle School Students in Hong Kong (ED99049) ✉ CHANG Lei
1999-00	Social-emotional and Parental Indicators of Withdrawn and Aggressive Behaviors in Primary School Children (ED99029) ✉ CHANG Lei • DODGE Kenneth* • SCHWATZ David*
1999-00	Exploring the Metacognitive Thinking and Learning Skills of Gifted Learners (ED99050) ✉ CHENG Pui Wan • CHAN Wai Ock David • CHEUNG Ping Chung
1999-00	The Psychosocial Development and Achievement Motivation of Gifted and Nongifted Children in Hong Kong (CU99139) ✉ CHEUNG Ping Chung • LAU Sing*
1999-00	Politeness Effects During Group Problem Solving (ED99022) ✉ CHIU Ming Ming
1999-00	Feasibility of Web-based Computerized Adaptive Tests (CAT) on Primary School Mathematics (ED99032) ✉ HAU Kit Tai • KAN Wing Kay (Dept of Computer Science and Engineering) • WEN Jianbing • KONG Chit Kwong* • CHANG Hua Hua* • CHENG Zi Jian*

<p>1999-00 Setting Mathematics Standard for Primary and Secondary School Students in Hong Kong (ED99036) ✎ HAU Kit Tai • CHANG Lei* • WEN Jianbing • KONG Chit Kwong* • CHENG Zi Jian*</p>	<p>1998-99 Detecting Transitions in the Development of Class-Inclusion Understanding (SS98032) ✎ NI Yujing</p>
<p>1998-99 Teacher Burnout: Its Relationships with Teacher Self-Concept, Occupational Stress and Purpose in Life (SS98031) ✎ LAU Siu Ying Patrick</p>	<p>1998-99 Inhibition of Thought and Action (CU98191) ✎ SHIU Ling Po • KORNBLUM Sylvan* • CHAN Tin Cheung (Dept of Psychology)</p>

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see also <P003534>, <P007304>, <P018202>, <P018728>, <P969423>, <P977639>, <P989199>, <P998053>, <P999665>

RESEARCH PROJECTS

Development of PE Assessment Related Profile System - Including Electronic Recording System

✉ CHAN Wan Ka Daniel • HONG Youlian •
Robert Carroll* • Chau Cheong Leung*

☐ 1 December 2000

❖ Education Department, Hong Kong SAR
Government

The aims of the project are:

- (1) to compare and review the Profile system alternative methods of assessment in PE and assess their feasibility to report and improve the quality of teaching and learning in PE.
- (2) to review and improve the supporting software (SPEAR) and identify elements that suit the needs of schools, teachers, students and parents.
- (3) to identify suitable school-based experiences for schools to make references.
- (4) to review the practices of a number of sample schools in Hong Kong and compare similar experience for overseas and identify models to be used for school-based development.

The finding will benefit the development of the secondary school physical education curriculum in Hong Kong. This project involved 20 sample schools. (ED20017)

Quality Assessment of Hong Kong Secondary School Physical Education: The Use of Self-Evaluation Approach and Performance Indicators

✉ HA Sau Ching Amy • JOHNS David Paul

☐ 1 September 2000

❖ Quality Education Fund, HKSAR Government

Physical Education is devoted to the physical development of the student and like other school subjects is evaluated to ensure that it produces defined outcomes efficiently and effectively. In order to reassure the government and the public of their achievement, physical educators must maintain high standards with regard to planning, delivery and evaluation of their program. To accomplish these aims, teachers in physical education must possess the necessary knowledge and techniques that can be applied to teaching, learning and overall program effectiveness. Therefore, the primary objectives of this project are threefold:

- (1) To provide in-service physical education teachers with training and support to conduct a self-examination of their programs in accordance with professional standards of practice to determine areas of effectiveness and those requiring improvement.

- (2) To provide in-service teachers with current educational theory and practice (including reflective teaching, children's needs and interest, contemporary physical education models, effective student learning and evaluation techniques) before investing resources to improve program quality and evaluation effectiveness.

- (3) To provide a framework for the development of performance indicators to evaluate the Hong Kong physical education program.

(ED20010)

A Study on Quantifying Kinematics and Muscle Strain During Manual Lifting Different Weights in Hong Kong

✉ HONG Youlian • WAN Yu Kwan

☐ 1 October 2000

❖ Occupational Safety and Health Council
Research Grant

The objectives of this study are to quantify the mechanical strain of low back muscle and movement kinematics during manual lifting of different weights by Hong Kong Chinese subjects and to make recommendation for the safe weight of manual lifting in Hong Kong. 30 healthy male subjects aged 20-30 will be recruited for this study. The subjects will be asked to manually lift a box of different weight (0, 8, 16, 20 and 24kg) with the squat technique, a technique that has been officially recommended for manual lifting in Hong Kong. The lifting movements will be video taped and analyzed. The electromyography activity of 8 muscles on the back and leg will be recorded and analyzed. The effects of weights lifted on movement kinematics in terms of trunk inclination angles and knee joint angles, and on muscular mechanical strain will be analyzed. It is hoped that the study would provide evidence for the recommendation of the safe weight during manual lifting in Hong Kong.

(BL20008)

Quantitative Analysis of Muscle Loading During Tai Chi (TC) Exercise in Older Adults - A Pilot Study

✉ HONG Youlian • LI Jingxian

☐ 1 November 2000

❖ CUHK Research Committee Funding (Direct
Grants)

Studies have demonstrated that TC encompasses important elements that may improve health and fitness. Compared to their sedentary counterparts, the older adult TC practitioners, particularly the long-term practitioners, performed better in tests of physical conditions, such as muscle strength, balance

control and flexibility. Moreover, long-term TC training improved balance capacity without vision that could not be observed after short-term TC exercise. However, to our knowledge, no experimental data have been provided to quantitatively assess the muscle loading during performing TC. Questions about how high load is exerted on the lower extremity muscles during TC exercise and why TC exercise has beneficial effects on muscle strength, balance capacity, and cardiovascular function are unclear.

In this study, twenty TC practitioners who are 60 years old and have practiced TC for 5 years or more will be recruited to serve as subjects. The electromyography (EMG) signal of the lower extremity muscles will be measured during TC exercise and will be normalized. Muscle loading during TC exercise will be indicated by the normalized EMG which is the percentage of the EMG measured during TC exercise to the EMG measured when the Maximum Voluntary Contraction (MVC) is performed. The normalized EMG will be taken as the quantitative assessment of the working load of the associated muscles during TC exercise.

The results of this project will enrich the understanding as to the impact of TC exercise on muscle loading, and enable us to lend insight into what aspects of muscle movement are affected by TC for elderly people.

(BL00638)

Exploring the Characteristics of Neuromuscular Activity and Movement Kinematics and Kinetics in Tai Chi (TC) Exercise

✉ HONG Youlian • LI Jing Xian*

☐ 1 December 2000

❖ Research Grants Council (Earmarked Grants)

It has been pointed out in literature that regular TC exercise can improve physical condition in muscle strength, balance control and flexibility in the elderly. However, no experimental data have been reported which explore the neuromuscular activity, movement kinematics and kinetics during TC exercise.

The purposes of this study are threefold. The first purpose is to profile the body segmental movement, ground reaction force to each foot, and lower extremity muscle activity of TC movements. The second purpose is to determine the neuromuscular coordination in performing TC exercise by combined analysis of muscle activity, movement kinematics and kinetics. The final purpose is to assess the changes of movement control resulted from long-term TC training by comparing characteristics of neuromuscular activity, movement kinematics and kinetics during TC exercise between experienced TC practitioners and TC beginners.

The results of this project will enable us to better understand the neuromuscular characteristics of TC

exercise, its movement kinematics and kinetics, and the influence of long-term and short-term TC training on neuromuscular activity. These findings might lend insight into which aspects of movement control are affected by TC. The evidence provided by this study could encourage more elderly people in Hong Kong to practice TC regularly and long-term.

(CU00360)

Muscle Activity, Movement Kinematics and Kinetics During Tai Chi Movement in Anterior Cruciate Ligament (ACL) Patients

✉ HONG Youlian • CHAN Kai Ming (Dept of Orthopaedics & Traumatology) • LI Jingxian • Mario Mario Lamontagne*

☐ 1 April 2001

❖ CUHK Mainline Research Scheme

Rupture of the anterior cruciate ligament (ACL) is a common sports injury leading to muscle weakness, and subsequently knee instability and loosing normal function. One of the goals of rehabilitation in ACL injury is to build muscular strength and endurance to improve the knee stability and help patients to return to normal function. Walking and isokinetic training have been the exercise codes for the rehabilitation of ACL patients, but they require space, facilities or relative high cost.

Tai Chi Chuan (TCC) practice can improve knee extension strength and endurance in healthy people. During TCC exercise practitioners can adjust the intensity, degree of difficulty, and body posture by self-feedback. Moreover, no additional facilities are needed. Therefore, TCC seemly provided all demanding to the ACL patients in rehabilitation. However, no experimental evidences in neuromuscular activities, movement kinematics and kinetics during TCC exercise in ACL patients have been provided.

The ultimate goal of this study is to look at the effect of TCC exercising in the rehabilitation for ACL patients. The objectives are three-fold; (1) to quantify kinematically the TCC movements in ACL patients; (2) to measure the neuromuscular activity of lower limbs, movement kinematics, movement kinetics in terms of plantar pressure distribution for ACL subjects during TCC movements and walking; and (3) to compare the characteristics of neuromuscular activities, movement kinematics and kinetics between TCC exercise and walking in ACL patients. It is expected that the information obtained from this study provides the basis of applying TCC as exercise mode with good training effects, lower costs, and easy to practice in the rehabilitation of the patients with ACL injuries.

(MD20056)

Use of Information Technology in Quality Physical Education: Development of An Interactive Web-based Computer Program

- ✉ HUI Sai Chuen • CHAN Wan Ka Daniel
□ 1 August 2000
❖ Quality Education Fund, HKSAR Government

Physical education (P.E.) has been viewed as a subject of old fashion because the teaching of physical education is characterized by out-door activities which has limited application in technology. However, the development of quality education in Hong Kong is heading strong emphasis in the application of information technology (IT). Under the continuously encouragement from the Education Department, a number of schools in Hong Kong has equipped with high quality computers for teaching and administration. Most of these computer systems allow access to the Internet so as to enrich students' knowledge and experience through the electronic super-highway. Unfortunately, there are very limited educational resources in physical education to fit into this new trend of educational development. In view of this, there is a need to develop an interactive computer program using IT to improve the effectiveness and efficiency of physical education teaching. One of the major targets for this project is to develop a web-based interactive computer program that can provide excellent resources in P.E. for both teachers and students. This computer program would include real-play video for sports skills demonstration on most sports items, instructions for skill tests, tailor-made statistic program, self-evaluation of physical fitness, sports-related theories, and a platform for sharing ideas and resources among P.E. teachers in Hong Kong through the internet. (ED20006)

Effects of Enriched Physical Education Programs on Physical Fitness in Schoolchildren

- ✉ JOHNS David Paul • HA Sau Ching Amy • WONG Heung Sang Stephen
□ 1 October 2000
❖ CUHK Research Committee Funding (Direct Grants) • Research Grants Council (Earmarked Grants)

This longitudinal study examines the specific fitness levels of two groups of secondary school students over the period of a school year. One group will be involved in an enriched physical education program consisting of 8 x 40 minutes periods per week while the other participates in the mandatory physical education program consisting of 2 x 40 minutes periods per week. While it is speculated that more physical education will produce students with greater fitness, no specific information is available on the

benefits of enriched programming and exactly how much exercise produces the optimum amount of benefit. Therefore, the primary objective of this study is to show exactly how different programs of regular exercise change the fitness profiles of the participants. This will be accomplished by repeatedly measuring the participants over a school year to demonstrate that different levels of involvement in regular physical education will induce changes in health indicators. Laboratory testing conditions will be used to measure aerobic function, muscular strength, body composition, blood pressure. Participants will be required to maintain their normal lifestyle patterns during the experimental period. A youth risk surveillance survey will be conducted with the participants at each testing to further monitor their physical activity related behaviors. (CU00381)

Effect of Hot Environment on Performance During Simulated Cycling and Running in Triathletes

- ✉ WONG Heung Sang Stephen • LAM Ching Wan (Dept of Chemical Pathology) • CHEN Jidi*
□ 1 August 2000
❖ Hong Kong Sports Development Board Research Grant

The aim of the proposed project is to examine the effect of a hot environment on performance during simulated cycling and running in Hong Kong triathletes. Ten to twelve trained triathletes will be recruited from the Sports Institute or local clubs for the study. Subjects will randomly perform two simulated cycling and running (bike = 40 km; run = 10 km) time trials in the laboratory using a cycle ergometer and motor-driven treadmill. In both trials, all conditions will be identical, except for the ambient temperature which will be either hot (~30°C, dry bulb temperature, ~70% relative humidity) or moderate (~20°C). Thermoregulatory and metabolic responses will be monitored during the cycling and running stages so as to assess the environmental stress on various physiological systems. The findings from the present project are expected to provide a scientific basis for future investigations in this particular focus sport in Hong Kong. (ED20002)

Effect of Rehydration with Beverages & Water on Recovery from Exercise

- ✉ WONG Heung Sang Stephen
□ 1 August 2000
❖ Otsuka Pharmaceutical Co Ltd (HK)

The aim of the proposed project is to examine the effectiveness of two common rehydration beverages [a lemon tea (LT) drink and an electrolyte (E) solution] compared with distilled water (DW) for whole body rehydration, blood volume restoration, and thermoregulatory responses during a 4 h rehydration-recovery period (REC) following exercise-induced dehydration. Ten to twelve recreational runners will be recruited from the university or local clubs for the study. Subjects will randomly run at 70% VO_{2max} on a level treadmill for 60 min on three occasions. After exercise, the REC will begin during which subjects will drink either a volume of LT, E or DW equal to 150% of their fluid lost. The fluids will be ingested in equivolumetric measures at 30 min intervals during the first 2 h of the REC. Thermoregulatory and metabolic responses will be monitored during the run and REC. Blood and urine samples will also be obtained throughout the experiments to assess the effectiveness of rehydration. The practical significance of the answers to these questions will be readily appreciated by those exercise scientists, health professionals, coaches and athletes who are involved in the preparation for, the participation in, and the recovery from, sports in which success is primarily determined by effective fluid replacement. (ED20018)

Regular Exercises for Health - Morning Exercise, Eye Exercise and Light Stretching Exercises During the Change of Class Period

- ✉ WONG Heung Sang Stephen • LAU Wing Chung# • SUNG Yn Tz Rita (Dept of Paediatrics) • CHEN Jidi* • Chen Shiyi* • Li Zhijun* • Lee Yau Wing Vincent* • Chan Kui Yin*
- ☐ 1 December 2000
- ❖ Education Department, Hong Kong SAR Government

Exercise and other lifestyle factors are major determinants of an individual's health status and provide great opportunities for continuous progress in children health. Obesity rates among children and adolescents have doubled in the past 20 years. Obese children are more likely to become obese adults and as a result are at increased risk of developing chronic diseases including diabetes, high blood pressure, heart disease, stroke and certain cancers. Although a poor diet is often sited as the culprit for the rise in childhood obesity, the key factor is energy imbalance induced mainly by physical inactivity. Physical activity levels of school age children in Hong Kong SAR has been found alarmingly low and many young people do not engage in daily moderate physical activity or in vigorous physical activity at least 3 days per week. The solutions to Hong Kong's children health problems and physical inactivity must

focus on prevention throughout life from good lifestyle establishment when young. (ED20016)

Effect of Frequency of Ingestion of High Glycemic Index Foods on Recovery From Prolonged Exercise and Subsequent Endurance Capacity

- ✉ WONG Heung Sang Stephen • WOLEVER Thomas Matthew Story*
- ☐ 1 March 2001
- ❖ CUHK Research Committee Funding (Direct Grants)

Fatigue during prolonged submaximal exercise is associated with the depletion of endogenous carbohydrate (CHO) stores (Bergstrom et al., 1967). Rapid restoration of muscle glycogen after exercise is of importance for optimal substrate provision during subsequent bouts of exercise (Costill and Speaks, 1973). Carbohydrate-electrolyte solution is useful for the recovery process because it can serve the twin aims of providing a source of CHO to replenish the body's limited stores and supply water and electrolytes to achieve rehydration during the recovery process (Gonzalez-Alonso et al., 1992). However, ingestion of large amounts of CHO in the form of CHO-electrolyte solution, during a short-term recovery, has been shown to result in disturbances in fat and CHO metabolism which prevent an improvement in endurance capacity during subsequent exercise. Therefore, the purpose of the project is to examine the effect of the frequency of ingestion of high glycemic index foods on short-term recovery and subsequent running capacity. (ED00620)

Effect of High Glycemic Index Foods on Recovery From Prolonged Exercise

- ✉ WONG Heung Sang Stephen • Chung Susan* • CHUNG Pak Kwong*
- ☐ 1 June 2001
- ❖ Hong Kong Sports Development Board Research Grant

Fatigue is one of the major factors that limit the performance of an athlete. There are some factors that cause fatigue, especially the depletion of glycogen store, either in liver or muscle. One of the tackling approaches is simply to restore the glycogen level rapidly in order to prepare the next bout of exercise. Such rapid recovery can be achieved from ingestion of carbohydrate (CHO) food directly, or drinking CHO-electrolyte beverages. Glycemic Index (GI) is one of the best ways to describe the postprandial blood glucose responses to CHO foods as it avoids the confusions in interpreting the resultant metabolic and physiological responses.

A recent study has shown that ingesting high GI food can improve the subsequent endurance capacity. However, different CHO intake pattern may affect the insulin level which cause the depletion of blood glucose, whenever at the beginning of the next bout of exercise after a 4-hours recovery period. The aim of this study is to provide scientific information on consumption of high GI meal either in “gorging” or “nibbling” intake pattern during a short-term recovery. (ED00673)

Junior Secondary School Physical Education (ED99031)
 ✉ HA Sau Ching Amy • CHAN Wan Ka Daniel • RINK Judith E.*

Please refer to previous issues of this publication for more details of the following ongoing research at the department:

Edition Title/Investigators

1999-00 Investigation on Health-related Physical Fitness of School Children in Hong Kong (CU99131)
 ✉ CHAN Chin Ming Roy • HONG Youlian • HA Sau Ching Amy • HUI Sai Chuen • WONG Heung Sang Stephen

1999-00 Reliability Test on Swimming Check Lists Assessment Form: Implications for Teaching and Coaching (ED99062)
 ✉ CHAN Wan Ka Daniel

1999-00 Authentic Assessment: The Implications of the Observational Checklists and Scoring Rubric in School Physical Education Programme (ED99052)
 ✉ CHAN Wan Ka Daniel • HONG Youlian • Carroll Robert*

1998-99 Qualitative Measures of Teaching Performance and Student Achievement in Physical Education (ED98013)
 ✉ HA Sau Ching Amy • RINK Judith E.* • CHAN Wan Ka Daniel

1999-00 The Jump Rope for Heart Project: An Education Programme for Hong Kong School Children (ED99037)
 ✉ HA Sau Ching Amy • WONG Heung Sang Stephen • CHAN Wan Ka Daniel

1999-00 Value Orientations of Physical Education Teachers Among Hong Kong, Shanghai and Taiwan (ED99023)
 ✉ HA Sau Ching Amy • KEH Nyit Chin* • XU Ben Li*

1999-00 Improved Individualization Through Program Modifications for Hong Kong

1999-00 The Effects of Carrying School Bags on Biomechanical and Physiological Responses in Children (CU99122)
 ✉ HONG Youlian • WONG Aaron Shun Ki* • LI Jing Xian*

1999-00 Biomechanical Analysis of Fin Swimming and Training Effects (ED99011)
 ✉ HONG Youlian • TSE Marcus* • LUK Tze Chung

1999-00 Effects of Lifting Weight on Low Back Muscle Loading During Manual Lifting (ED99024)
 ✉ HONG Youlian

1999-00 Fitness Prediction Model for Hong Kong Children (ED99010)
 ✉ HUI Sai Chuen • WONG Heung Sang Stephen • WONG Wing Kin Gary (Dept of Paediatrics) • LAU Wing Chung#

1999-00 Validity of Rockport Walk Test and Bio-electrical Impedance Analysis for Evaluation of Fitness in Hong Kong Children Age 8 to 12 (ED99025)
 ✉ HUI Sai Chuen • WONG Heung Sang Stephen • WONG Wing Kin Gary (Dept of Paediatrics)

1999-00 Evaluation of Cadence Curl-up Test in Measuring Abdominal Muscle Endurance (ED99053)
 ✉ HUI Sai Chuen

1999-00 Physical Activity, Physical Fitness and Heart Disease Risk Factors (ED99059)
 ✉ HUI Sai Chuen • THOMAS Neil G (Dept of Medicine & Therapeutics) • TOMLINSON Brian (Dept of Medicine & Therapeutics)

1999-00 Nutritional Knowledge and Attitudes of Athletes and Coaches (ED99009)
 ✉ WONG Heung Sang Stephen • HA Sau Ching Amy • SHI Xiaocai* • XU Beuli* • LU Yanuzhen*

1999-00 Fluid Balance During Exercise in Children: Effect of Drink Preferences and Rehydration (ED99027)

- ✉ WONG Heung Sang Stephen • SHI Xiaocai# • JOHNS David Paul • LEUNG Chi Bon* 1999-00 Influence of Glycemic Index Meals on Recovery and Subsequent Exercise Capacity (ED99055)
✉ WONG Heung Sang Stephen

RESEARCH OUTPUTS AND PUBLICATIONS

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- <P994742> **HUI Sai-chuen Stanley; YUEN Pak Yan; MORROW James Jr. and JACKSON Allen.** "Comparison of the Criterion-related Validity of Sit-and-reach Tests with and Without Limb Length Adjustment". *Research Quarterly for Exercise and Sport* vol.70 no.4, pp.401-406. USA, 1999.12.
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see also <P002816>, <P003910>, <P011316>, <P011318>, <P011457>