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ICT Implementation in Hong Kong Schools:
findings from an preliminary review of the HKSAR 5-year IT in Education strategy plan

Centre for Information Technology in School and Teacher Education

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Learning in a New Era:
5-year Strategy 1998/99 to 2002/03

Vision:

- to turn our schools into *dynamic and innovative learning institutions* where students can become more motivated, inquisitive and creative learners

- to link up our students with the vast network world of knowledge and information to enable them to acquire a *broad knowledge base and a global outlook*.

- to develop in our students capabilities to *process information effectively and efficiently*

- to develop in our students the *attitude and capability for independent life-long learning*
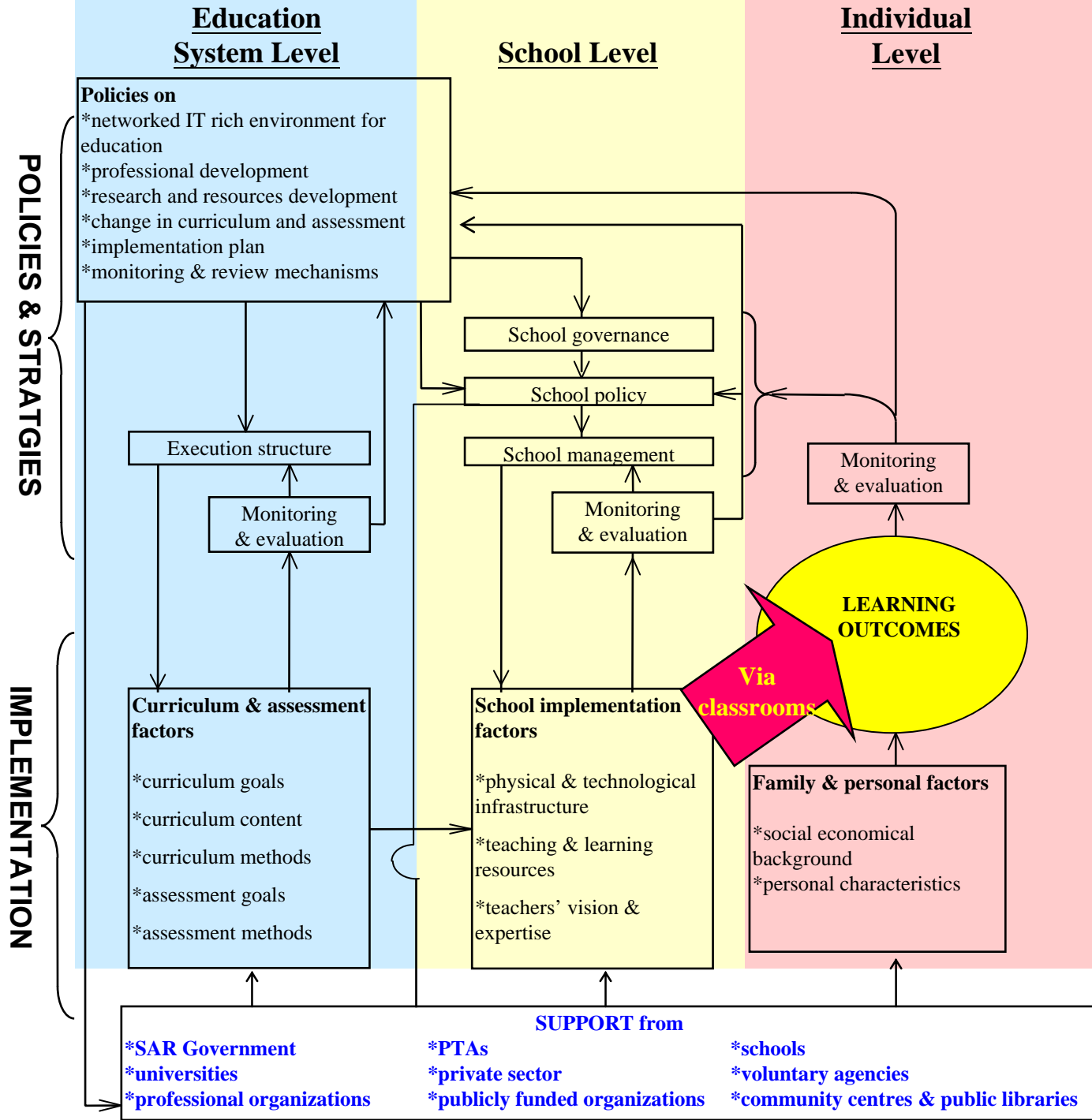
Components of the 5-year strategy

- Access and Connectivity

- Teacher Enablement

- Curriculum and Resource Support

- Community-wide Culture

The Review - broad objectives

1. To review the ***progress of the ITEd initiatives*** and to recommend necessary adjustments to the implementation of the projects;

2. To review the application of IT in education in the light of the ***extent*** to which schools have adopted and ***implemented pedagogical practices that use technology***;

3. To review the extent to which the vision of promoting ITEd has been met as reflected by ***teachers' and students' perceptions/adoption of IT in school*** education.
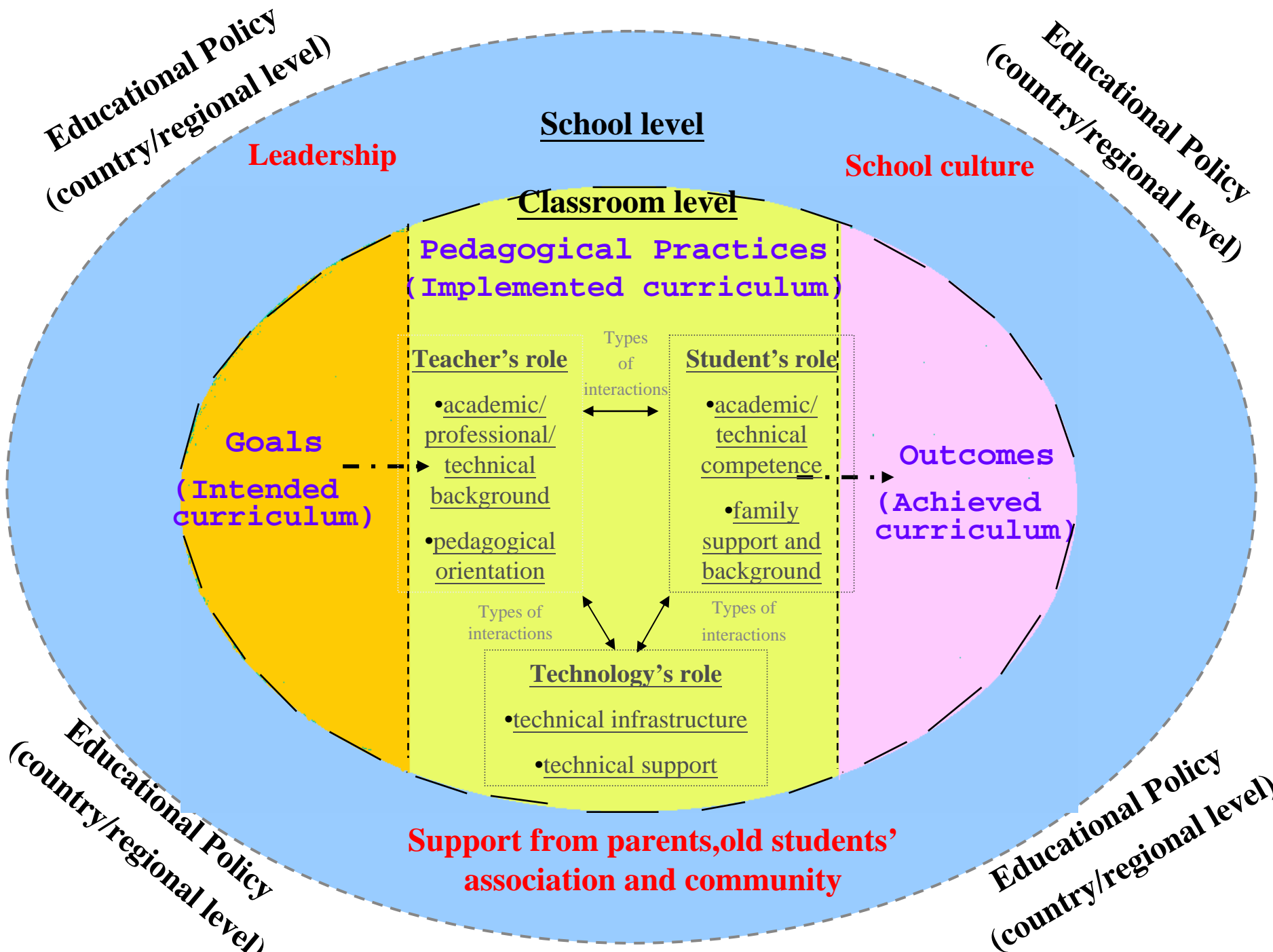
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The research framework:

A systems model of change for IT implementation in education

Education System Level

School Level

Individual Level

POLICIES & STRATGIES

IMPLEMENTATION

Policies on
*networked IT rich environment for education
*professional development
*research and resources development
*change in curriculum and assessment
*implementation plan
*monitoring & review mechanisms

School governance

School policy

School management

Execution structure

Monitoring & evaluation

Monitoring & evaluation

Monitoring & evaluation

LEARNING OUTCOMES

Via classrooms

Curriculum & assessment factors

*curriculum goals

*curriculum content

*curriculum methods

*assessment goals

*assessment methods

School implementation factors

*physical & technological infrastructure

*teaching & learning resources

*teachers' vision & expertise

Family & personal factors

*social economical background
*personal characteristics

SUPPORT from

*SAR Government
*universities
*professional organizations

*PTAs
*private sector
*publicly funded organizations

*schools
*voluntary agencies
*community centres & public libraries

Framework for conceptualizing and analyzing

IT-supported pedagogical practices in school settings

Educational Policy (country/regional level) *(top-left)*

Educational Policy (country/regional level) *(top-right)*

Educational Policy (country/regional level) *(bottom-left)*

Educational Policy (country/regional level) *(bottom-right)*

School level

Leadership

School culture

Classroom level

Pedagogical Practices (Implemented curriculum)

Goals (Intended curriculum)

Outcomes (Achieved curriculum)

Teacher's role
- academic/ professional/ technical background
- pedagogical orientation

Types of interactions

Student's role
- academic/ technical competence
- family support and background

Types of interactions

Types of interactions

Technology's role
- technical infrastructure
- technical support

Support from parents, old students' association and community

Methodologies & Instruments

Education System Level   School Level   Individual Level

POLICIES & STRATGIES

IMPLEMENTATION

Policies on
*networked IT rich environment for education
*professional development
*research and resources development
*change in curriculum and assessment
*implementation plan
*

Document Analysis:

- **Circulars**
- **Internal doc.**
- **Monitoring/ evaluation reports**

Document analysis:

- **School plans/ applications**

Monitoring & evaluation

Questionnaires:

- **Principal**
- **IT coordinator**

Case studies of pedagogical practices -using ICT

personal factors

Questionnaire:

Teachers

*teach resour

*teachers' vision & expertise

Questionnaire:

Students

assessment goals
*assessment methods

SUPPORT from

*SAR Government
*universities
*professional organizations

*PTAs
*private sector
*publicly funded organizations

*schools
*voluntary agencies
*community centres & public libraries

Findings

- Survey results:

  - Infrastructure & community support

  - Teaching and learning

- Document analysis & case studies

  - Policy & strategies at system & school levels

How schools take advantage of various initiatives

- *Access and connectivity*
- *Teacher enablement*
- *Curriculum and resource support*
- *Community-wide culture*

Implementation of ICT in Education since 1998

- Clear priorities and focus in its implementation
  - computer:student ratios
  - good connectivity
  - getting teachers to reach basic levels of IT competency
  - sufficient technical and human resource supports, provide curriculum resources
- Effective strategies for dissemination of resources to schools

Access and Connectivity

Mean	N	2001 HK	1999 HK
Primary	82	13.4:1	53:1
Secondary	47	7.5:1	36:1

- Greatly improved in student:computer ratio and connectivity
- Home access to Internet

  Teacher (95%)

  Student (82%)

- Pilot schools: high availability of hardware and peripherals and wide diversity of hardware deployment and resources distribution
  - Classroom
  - Computer rooms
  - Special rooms
  - Library
  - Staff room

Hardware and resources configuration in other schools was found to be quite homogeneous

- Computers made accessible to student outside of formal teaching time by schools were often limited

Mean(SD)	Primary	Secondary
Computers available after school	24.4(23.0)	61.9(44.7)
Opening hours per week	5.4(5.0)	17.0(15.1)

Teacher Enablement

- Noticeable improvement in the teachers' and students' IT skills since 1998 (primary, secondary)

  - Word processing, spreadsheet, presentation software (4.2, 4.3)
  - Advanced processing, spreadsheet, presentation software (4.0, 4.1)
  - Multimedia and web design (3.3, 3.5)
  - Advanced multimedia and web design (3.0, 3.1)
  - Basic operations of computer network (3.7, 3.8)
  - Using educational software (3.9, 4.0)
  - Integration of ICT into teaching and learning (3.7, 3.8)

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- Most teachers have already reached the BIT level
- Submission of teacher portfolios (teacher questionnaire)
  - Secondary 84.3% (22% IIT)
  - Primary 81.4% (14.9% IIT)

- Teachers had doubts about the need for teachers to reach more advanced levels of IT technical competence for the purpose of IT integration across the curriculum

Curriculum and Resource Support

- Major obstacles or difficulties: from support and resources to instructional software and teacher competence
- **Secondary**
  - Lack of suitable instructional software
  - Existing curricular is not adaptable to integrate ICT in classroom instruction
  - Lack of space in the classroom
  - Lack of teachers who are competent with the use of ICT in education
  - Teachers lack of knowledge / skills in using ICT in education
- **Primary**
  - Lack of suitable instructional software
  - Insufficient number of computers
  - Insufficient peripherals
  - Lack of teachers who are competent with the use of ICT in education
  - Lack of space in the classroom

- Useful web-based resources and technical support services were seen to be important by teachers, who also appreciated the efforts made by the ED in these regards

Community-wide Culture

- Collaboration culture in the community have mainly been local ones (*secondary*, *primary*)
  - Local schools (48%, 24%)
  - Local organizations (35%, 23%)
  - Local tertiary institutions (36%, 28%)
  - China schools (10%, 2%)
  - China organizations (4%, 1%)
  - China tertiary institutions (2%, 0%)
  - Overseas schools (4%, 1%)
  - Overseas organizations (4%, 0%)
  - Overseas tertiary institutions (0%, 1%)

- Teachers had more reservations towards collaboration and the impact of IT while students were found to be more open and positive
  - increases my social circle
  - increases opportunities to work with teachers from other schools
  - increase the opportunities to work with external organizations
  - enhances communications with parents

Impact on Teaching and Learning

The use of computers in the classroom

- In the early study (SITES-M1), it was found that a relatively high percentage of students at different levels have indicated that they had competence in basic computer operations as well as in the use of Internet.

- We wish to find out in the present study, how much computer have they used in the school curriculum and how did they used them?

- There is *no marked differences* between students of the Pilot Schools and other types of schools. The learning method in these schools *did not differ* substantially from others.

- Student from the *Pilot schools* reported that their teachers often asked or encouraged them to use computer in homework, or worked with them in solving computer problems, in extra-activities and other issues than the other category of schools.

Whether students are given more time in using the computer themselves?

- The findings show that there is *no mark difference* among the different category of schools in **the time spent in class**.

- Over half of the class time is used for **explanation** and **demonstration**.

- Students from *Pilot and ITC* schools are higher in percentage than the rest to indicate:

  - their teachers have introduced useful software in class,

  - their teachers introduced to them useful website, and

  - the students themselves found useful websites.

- More *Pilot school* students (29.3% vs some 23% of the rest) have acquired ICQ habit.

The readiness of schools in the use of IT in class

- The findings suggest that in both the primary and secondary schools, the *longer exposure* and engagement in computer usage is helpful to students in building up a habit of using IT in school and life.

- In the primary schools the scene is very different. When measured in the computer usage in subjects, both the *Pilot and ITC schools* performed better than those that do not have ED support. Unlike the secondary schools, the differences between the Pilot and ITC primary schools are small.

- One interesting phenomenon is that although there are clear behavioral differences in computer usage among students of different category of schools, we do not see a mark difference in their *attitude*.

- Although there is quantitative difference in computer *usage*, the *teaching method* in the different classrooms is very similar.

- There has not been, in our view, a paradigm shift in IT teaching and learning as advocated in the five-year strategy.

Implementation
at the systems level
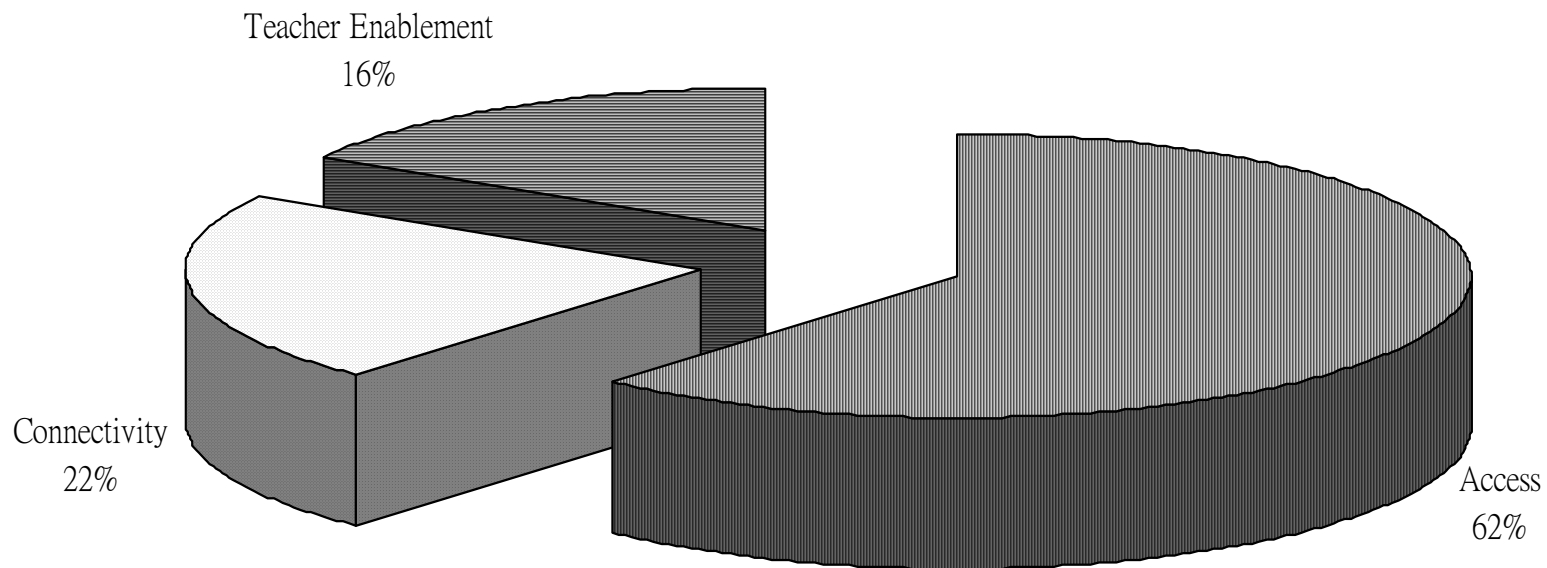
Total: HKD 3.05 billion

Figure 3.1.1 Non-Recurrent Funding by Objective

Access
4.2 %

Resource Support
95.8 %
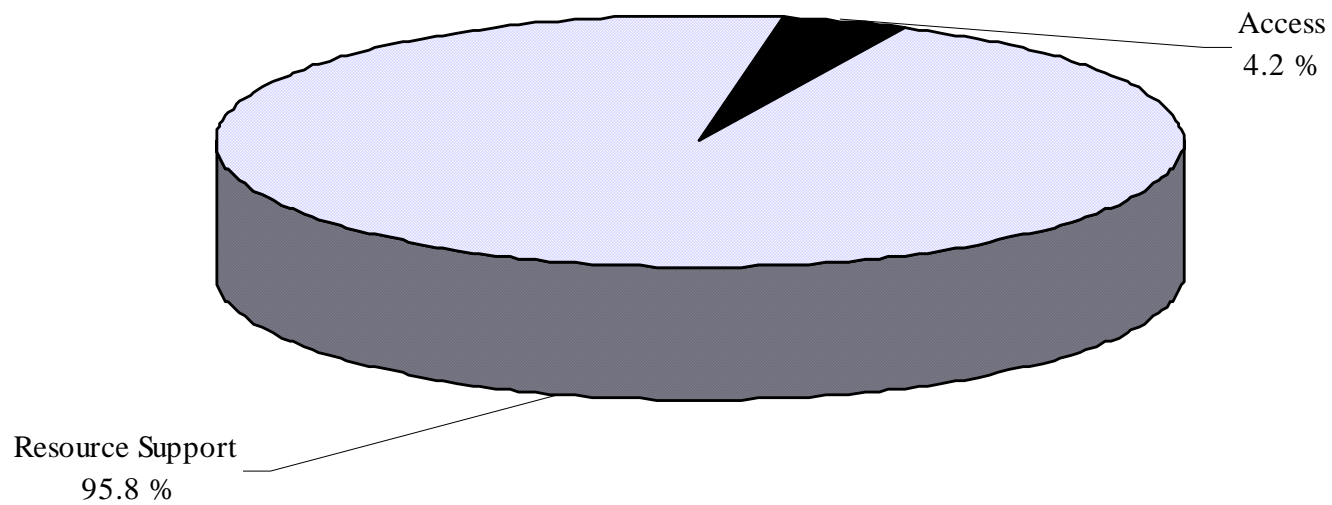
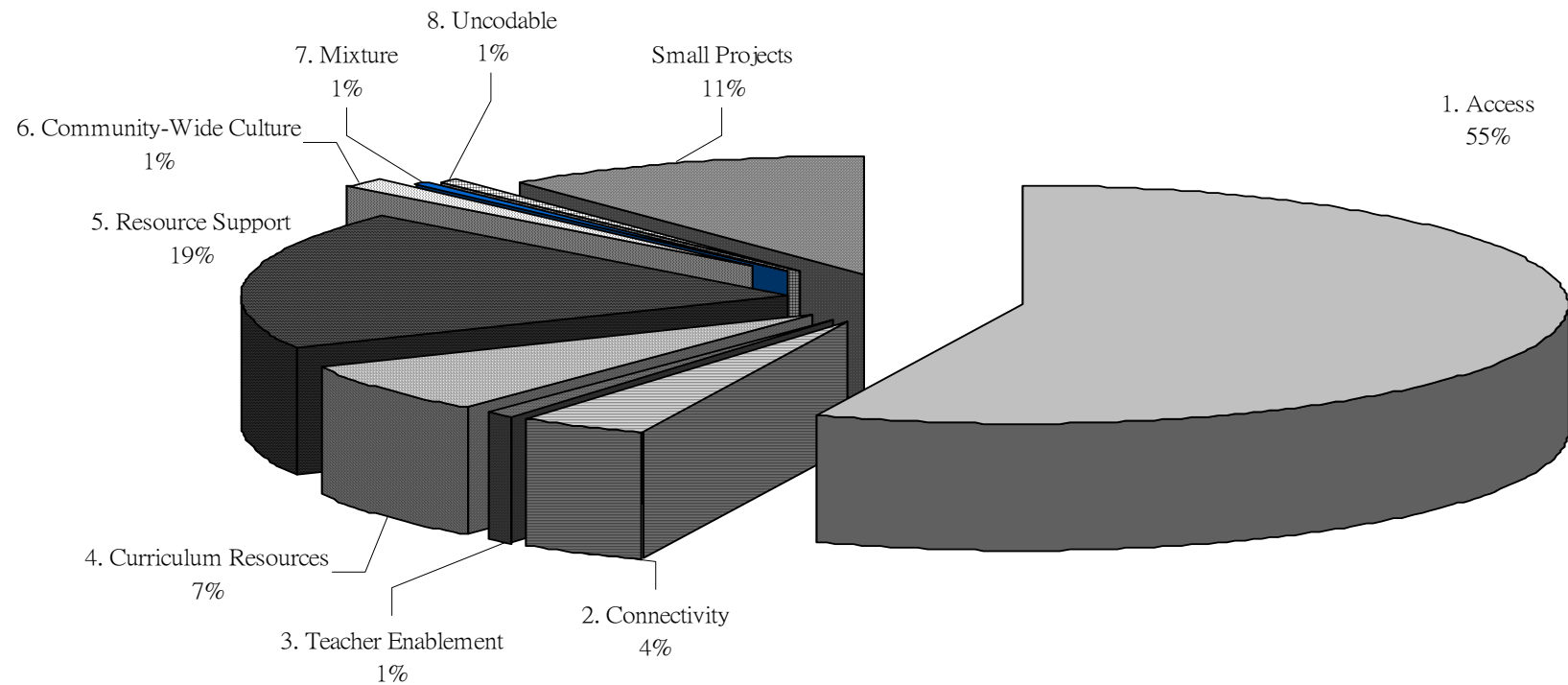Fig. 3.1.2 Recurrent Funding by Type
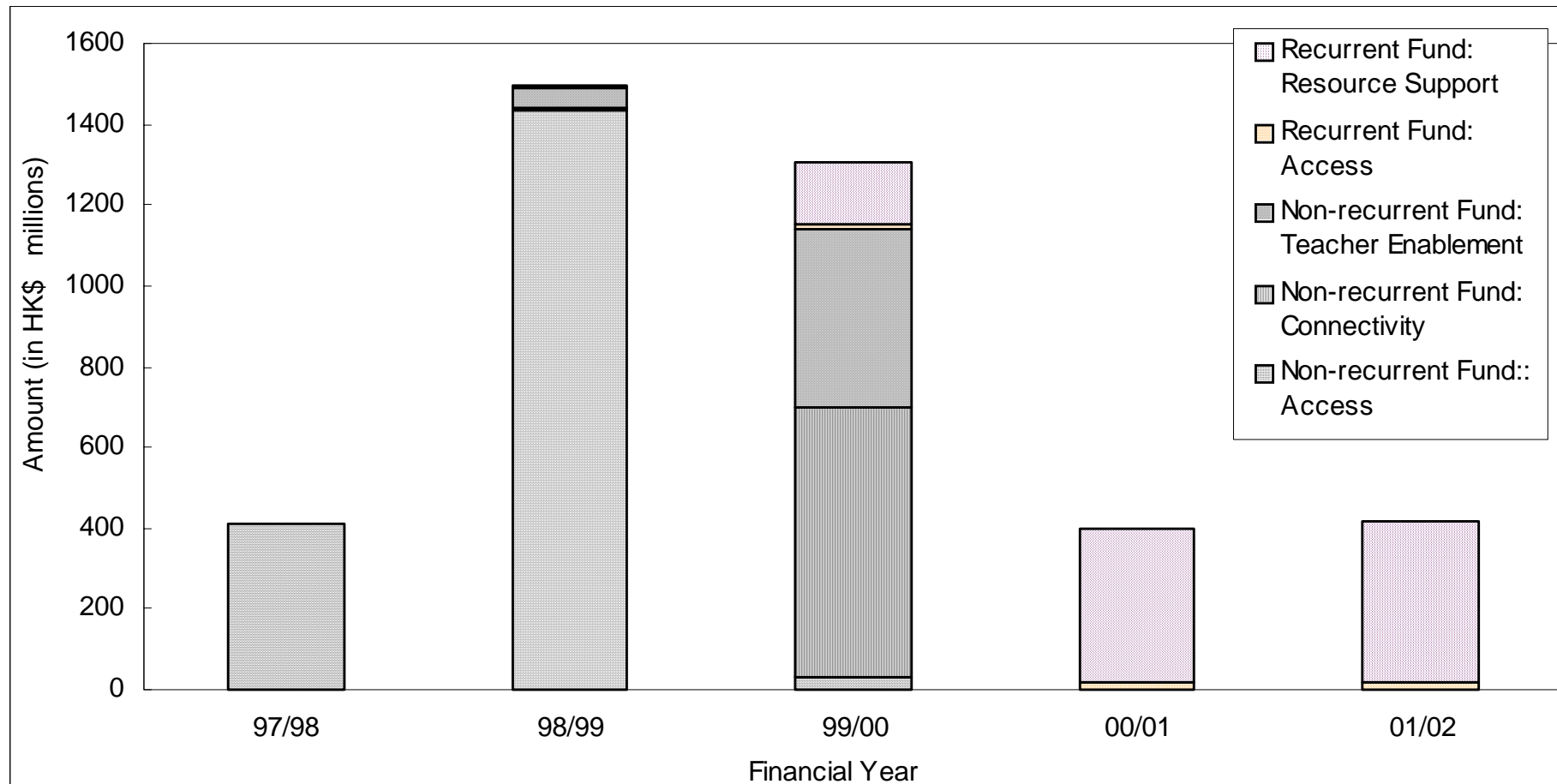
Figure 3.1.3 Government Funding for IT in Education by Key Category over Financial Year

Total: HKD 1.11 billion

Fig. 3.1.4 QEF funds granted (total) by Objective

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Foci for each strategy implementation

Access & Connectivity

- High student:computer ratio with good connectivity in the form of centralized multimedia computer rooms

Teacher Enablement

- All teachers reach a basic level of technical competence, most teachers some ability to develop multimedia resources using authoring and web page development tools

Resource Support

- Provision of IT coordinator with flexible deployment, additional technical support services

Implementation strategy – **rewarding readiness**

- Set solutions – fastest way to ensure attainment of baseline target & simple admin.

- Flexibility and freedom – a response to pilot schools' demand, but not really taken up by most schools

- Increased provisions given out as a competition of "readiness" & set menu of QEF packages

Implementation
at the school level

What distinguishes successful applications from unsuccessful ones?

The data indicates that when all the applications are taken as a whole, the main difference between successful and unsuccessful applications lies with the *ICT infrastructure* (existing and planned) in the schools submitting those applications, which might thus be interpreted as an indicator of ICT readiness used in the selection process.

What have we learnt about implementation strategies at the school level

Schools generally do not have a good understanding of the meaning of "*developing lifelong learning abilities in students*" and that it requires taking on curriculum change and innovation to achieve, most popular aim for implementing IT in education in schools was to use ICT as a tool to enhance the ability of teachers to present information effectively/interestingly.

"Paradigm shift" mentioned in the 5-year strategy to a reduction in the use of conventional chalk and board and to switch to using multimedia presentations/animations.

The enabling factors
(infrastructure, staff
development, etc.) need to be
considered in tandem with the
goals & purposes

Case studies indicate that only in schools where there is already a culture of curriculum innovation did the implementation of ICT helped to generate valuable pedagogical practices.

The Sequel

Theme Presentation 2 at 3:30 p.m.

Learning from International Case Studies on Innovative Classroom Practices using Technology