Computer-aided Language Learning: applications for bilingual education in early childhood

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Outline

- Survey of computer use in HK kindergartens
- Our cross-faculty interdisciplinary project on e-learning: confluence of linguistics, speech science engineering and pedagogy
- Demo of how CHELSEA and CRYSTAL support the acquisition of Cantonese, Putonghua & English
- Evaluation of e-learning software and websites for children
- Conclusions

Children and Computing

"If your kids are awake, they are probably online"
(New York Times article 2010 Jan 20)

Early Use of Computer

Use of computer begins at an increasingly young age: time to accept it as part of children's environment, "like the air they breathe, the water they drink and the food they eat." (Dr. Michael Rich, a pediatrician at Children's Hospital Boston who directs the Center on Media and Child Health)

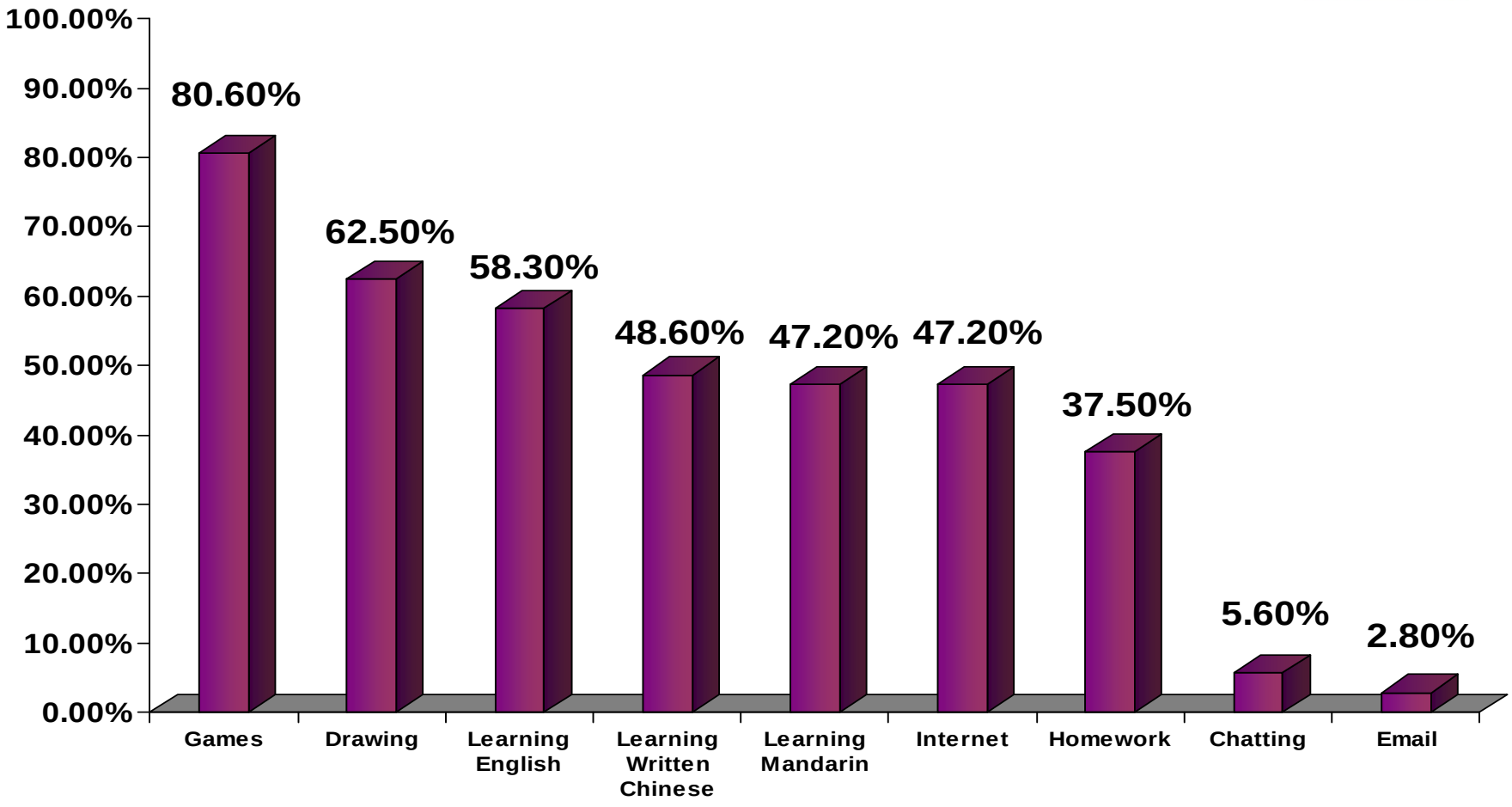
Computer use in HK children

- We interviewed 72 children (aged 3;0-6;0) in 2 kindergartens from low income families.

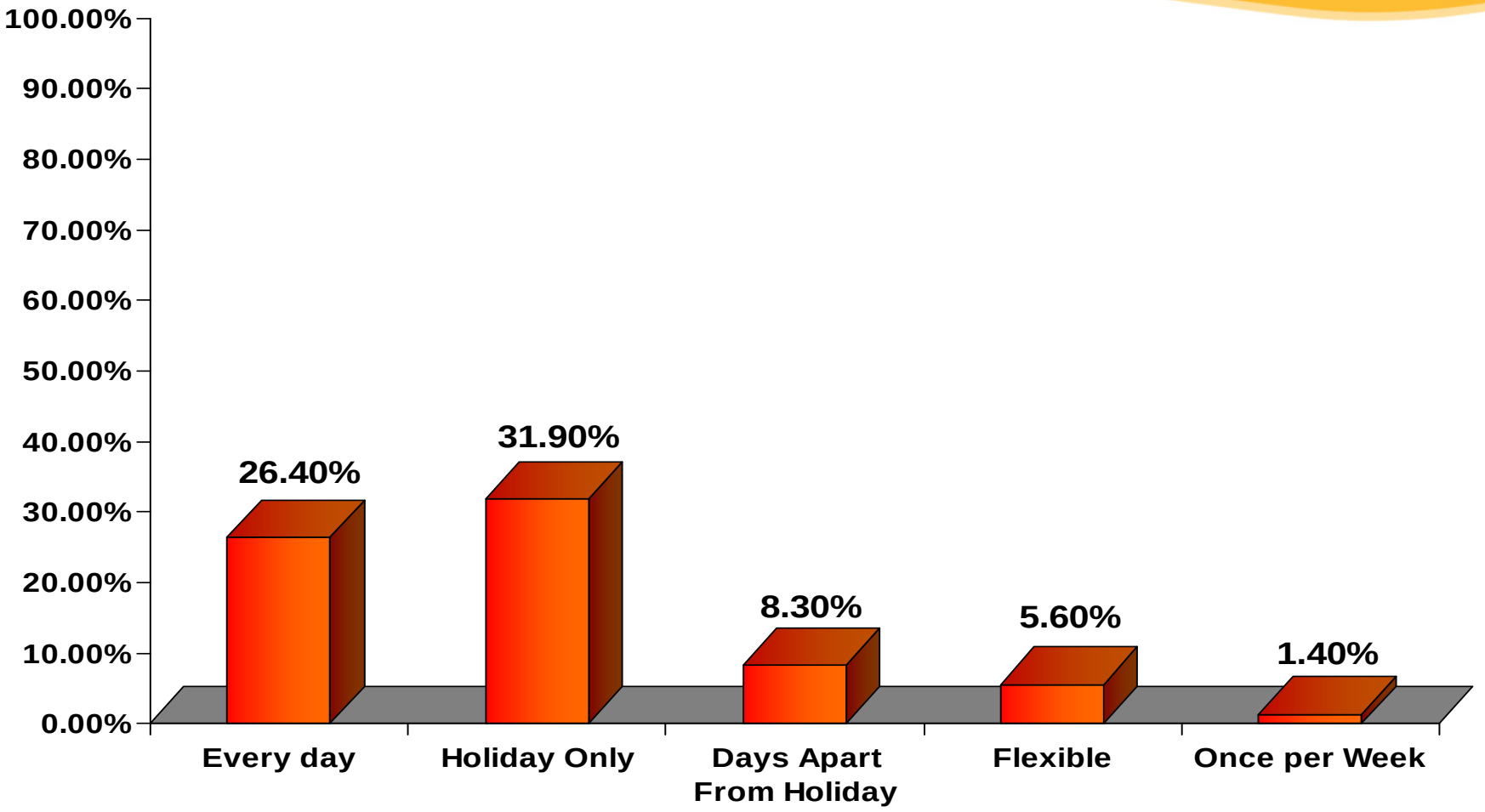
  Boys = 35 (48.6%)

  Girls = 37 (51.4%)
- 94.4% have a computer at home.
- 100% indicated that they use the computer to varying degrees.

Use of computers by children (3;0-6;0)



Frequency of computer use in children (3;0-6;0)



Children's use of computers

- Games: entertainment and recreation
- Language learning: learning Cantonese, Mandarin and English by playing games

  websites recommended by schools
- Socializing: connected with friends

Computing and e-learning

- Children introduced to suitably designed e-learning software and websites at the appropriate stage will develop both computer and language skills, killing two birds with one stone.
- Teacher training in early childhood education can also benefit from the applications of Computer Assisted Language Learning (CALL).

Objectives of our on-going project

- Advances in ICT bring new opportunities to CAPT (computer-aided pronunciation training) or CALL (computer-aided language learning)
- Benefits of the new learning platform – individualized, self-paced, private, round-the-clock, multimedia
- Powerful tool to support acquisition of phonology

Hong Kong students' L2 English

- We conduct an interdisciplinary project on computer-aided language learning (CALL) using automatic speech recognition based on data from CUHK students.
- The integration of expertise from engineering, linguistics, speech science and second language acquisition enables us to develop an effective tool to complement traditional forms of language learning.

Video Demo

CHELSEA矯聲

Automatic Speech Recognition program that can detect Cantonese learners' English non-target pronunciations

CRYSTAL晶晶

bilingual text-to-audiovisual-speech in Cantonese and Mandarin


Chelsea
These ships take cars across the river.

Software to support pre-school children's learning of English

The Alphabet (2000)

- help learners master the basic sounds; exercises on spelling (matching and typing of letters)

Easy Phonics (1995)

- learn phonics through games and songs

3D Froggy Phonics (1999)

- sounds-letter relationship; develop basic reading and spelling skills

Let's Go (1996)

- Oxford University Press – an interactive multimedia program on grammar and vocabulary

Sound Stories (1999)

- 30 sound books produced by Oxford Literacy Web with listening and spelling pattern activities.

Criteria for choosing e-learning materials for preschool children

- Quality of input – the content is relevant to the needs and experience of learners (Many overseas CDs produced for L1 users on literacy may not be entirely useful for Hong Kong children.)
- Accuracy of grammar & pronunciation - it is common to find mistakes in the commercially-produced software. For example, one of the CDs surveyed called "Easy Phonics" repeatedly says "there are 26 alphabets".
- Appropriate level of fun and challenge - the games should be educational and stimulating. After spending time on them, children should be able to benefit from them.

Teachers at the pre-primary level

- Need training to choose good software for use in the classroom.
- The success in using CALL software depends on school and family support.
- Many free websites on the Internet can make learning more interactive.
- e.g. http://www.britishcouncil.org/kids-stories
- http://www.firstschoolyears.com/literacy/word/word.htm

Conclusions

For children:

- It's important to nurture 21st century computing skills early
- Integrating games, e-learning of languages and computing skills combined with high quality educational resources can be powerful and effective.
- A unique kind of learning which involves the development of reasoning and higher level thinking throughout their lifetime.

Conclusions

For teachers:

- Familiarity with e-learning programs designed for children
- Making use of knowledge of how one language may influence the other in anticipating non-target pronunciations
- In the acquisition of English phonology, many recurrent patterns in Hong Kong learners can be attributed to their Cantonese.

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