Primary Four Students' Development of Research Skills through Inquiry-based Learning Projects

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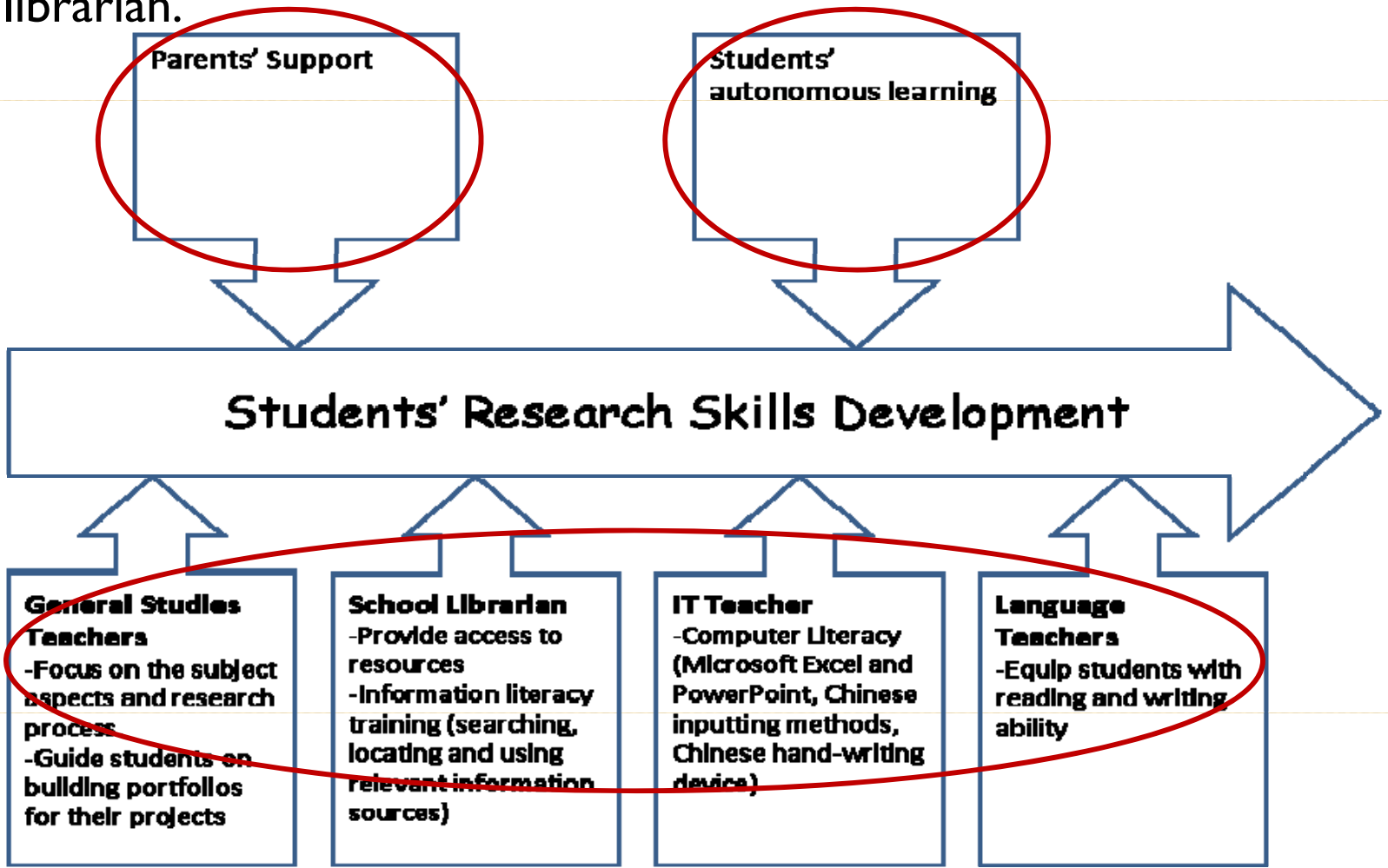
Introduction

- Harada and Yoshina (2004a, b), as well as Donham, Bishop, Kuhlthau and Oberg (2001) have shown the ***benefits*** of inquiry-based learning (IBL) for students, as compared to rote learning.
- "The ***norm*** in many classrooms remains teaching practice that results in rote learning and regurgitated facts" (Harada and Yoshina, 2004b, p. 22).
- Like many other parts of the world, rote learning is still the ***dominant*** way of teaching and learning in Hong Kong primary schools.
- In attempting to ***change this situation***, the Education Bureau of the Hong Kong SAR (EDB) introduced IBL into the General Studies curriculum as a way to help students develop basic inquiry, investigative and problem-solving skills (Education Bureau, 2007).

Introduction (con't)

- This study reports the IBL projects which were led by General Studies teachers, and heavily supported by the Chinese Language teachers, Information Technology (IT) teacher and the school librarian.



Research Methods

- This case study examined 141 P4 students from a local Hong Kong primary school
- The design involved two phases, each having an ***IBL project assigned by the General Studies teachers***, which the students were to complete with ***support from their Chinese Language teachers, IT teacher and school librarian***.
- Research Questions
  - What are the roles of a General Studies teacher in an IBL project?
  - How do the support from teaching staff and parents influence students' development of research skills through IBL projects? Teaching staff includes teachers in General Studies, Chinese Language, and IT, as well as the school librarian.
  - What is the process of students' knowledge cultivation in an IBL project?
  - How well do students develop their research skills through IBL projects?

Findings and Analysis

- The effectiveness of the IBL approach taken for this study in helping students to improve various skills and abilities
- Students' Improvement of Research Skills
- General Studies teachers' roles in guiding students through the inquiry process
- The process of students' knowledge cultivation in IBL projects
- General Studies teachers' evaluation on students' IBL projects

Effectiveness of the teachers and librarian collaborative approach in inquiry-learning

Interview/Survey Questions	Teaching staff	Parents	Students
1. Enjoyment of doing the project[a]	3.9	4.0	3.8
2. Level of difficulty of the project[b]	3.0	3.5	3.3
3. Parental support[c]	n/a*	2.4	2.7
4. Information literacy[c]	*4.0*	*3.7*	*3.6*
5. Reading interest[c]	*3.7*	*3.1*	*3.5*
6. Reading ability[c]	*3.9*	*3.3*	*3.5*
7. Writing ability[c]	*3.7*	*3.2*	*3.5*
8. Computer literacy[c]	*3.8*	*3.4*	*3.3*
9. Knowledge of the research topic[c]	*4.2*	*3.6*	*3.9*
10. Communication skills[c]	*3.8*	*3.4*	*3.7*
11. Research skills[c]	*3.6*	*n/a***	*3.5*
12. Overall support from school[c]	3.9	3.7	3.7

Notes:

[a] The respondents were answering according to a scale of 1-5, with 1 as 'not enjoying' and 5 as 'enjoying very much';

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* Teaching staff's views were not sought because parental support was not observable by the teaching staff.

** Parents' views were not sought since they were asked to take a rather passive role in this project so they may not know their children's development in this area.

Students' improvement in research skills

- Comparison of students' and teaching staff's perceptions on students' improvement in research skills
- Two factors influencing this improvement
  - Parental support
  - Teaching staff support

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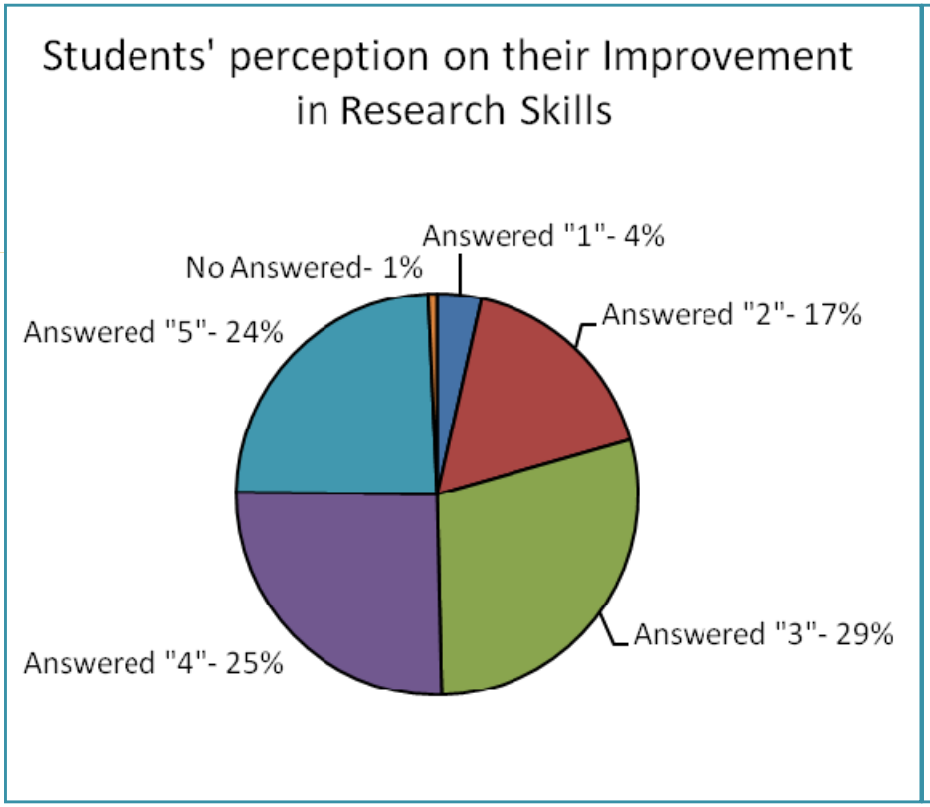

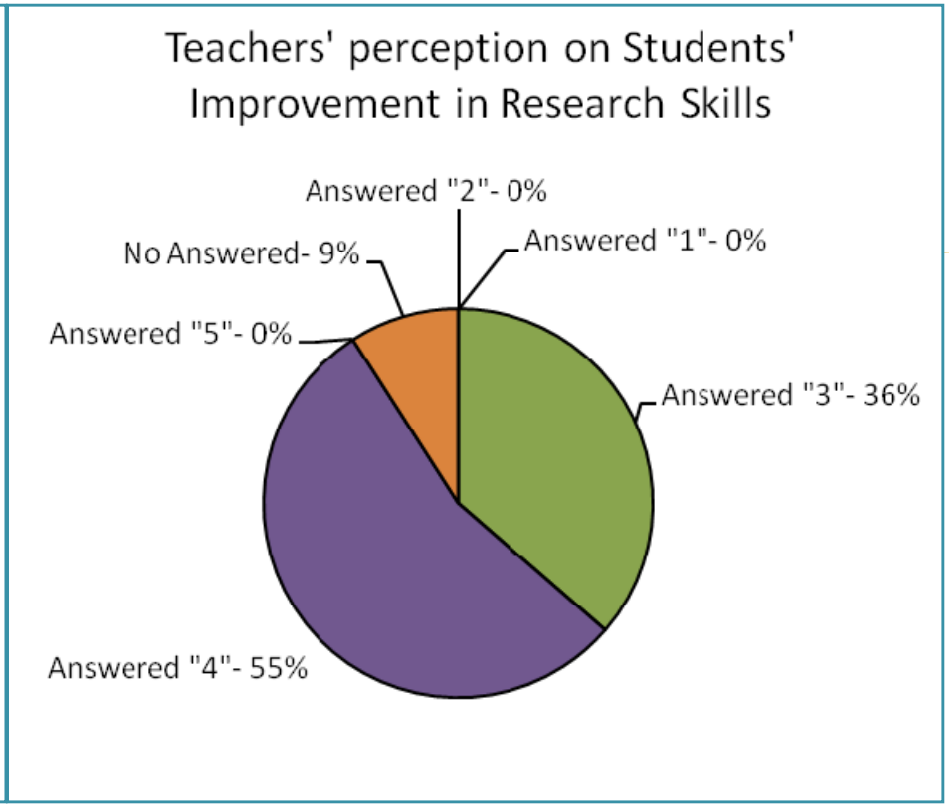

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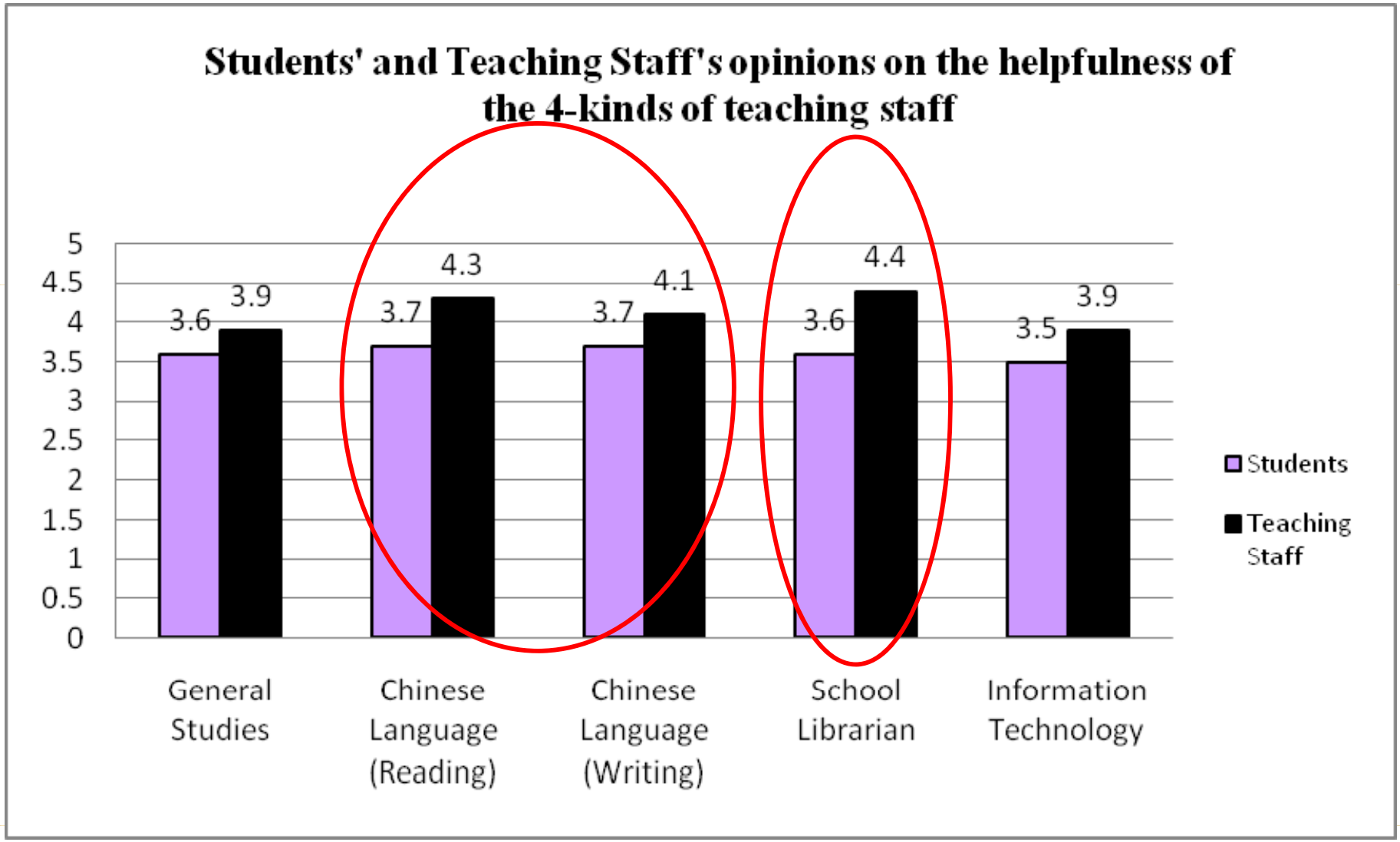
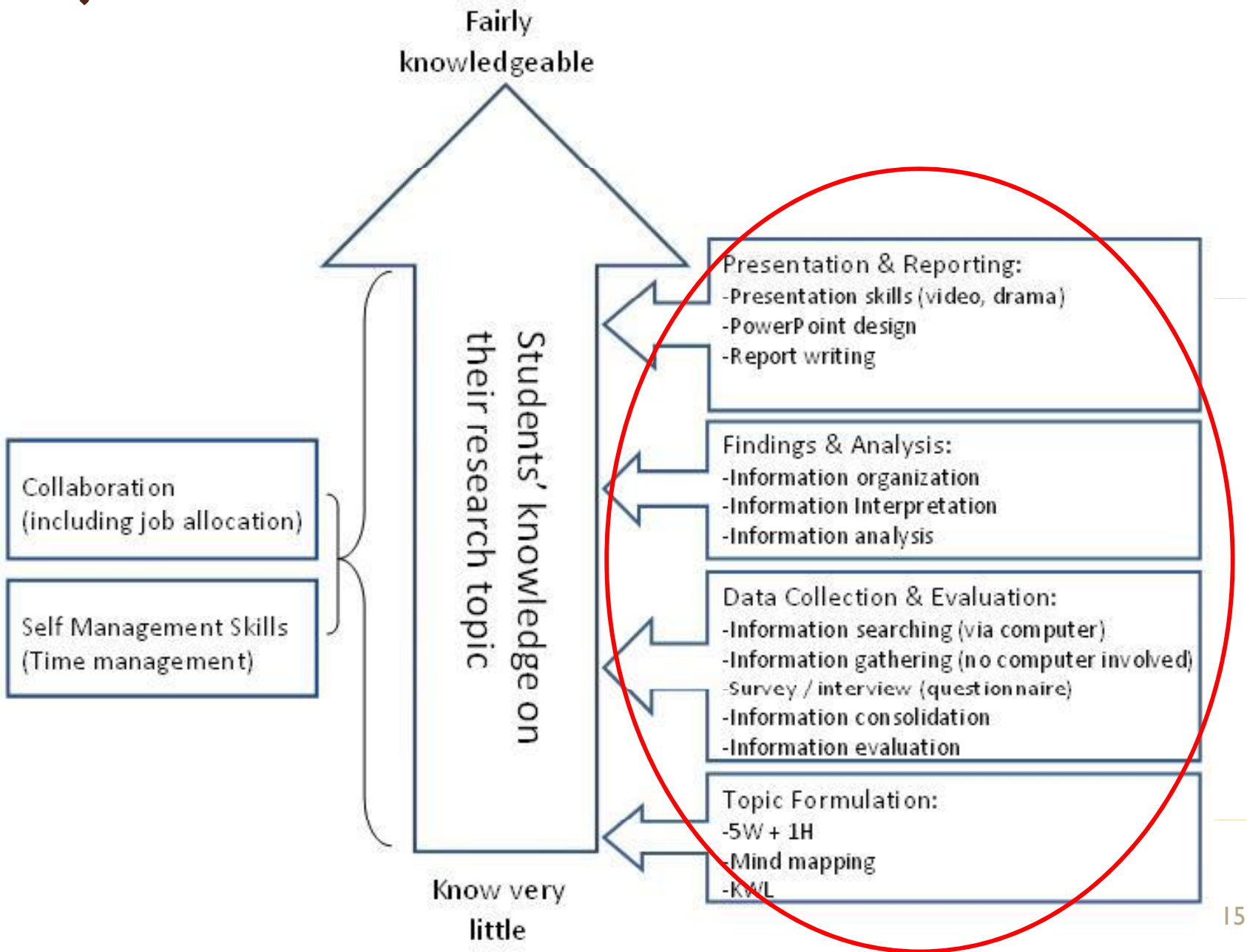


Role of the General Studies Teachers

1. Led the students through the inquiry-based projects each week in two lessons, totaling 1.5 hours:
   a. One class for teaching students research skills (e.g. brainstorming, formulating questions and organizing data).
   b. Another class for group discussion about the group portfolio and presentation design.
2. Assigned in-class exercises and homework to students to consolidate their research skills and knowledge.
3. Seek help from other teaching staff if necessary. For example, they seek help from Chinese teachers when students have the need to write introductions and summaries for their project.
4. Provided advice and guidance especially when students encountered problems that they cannot solve on their own during the project.
5. Regularly checked on students' progress in doing their project.

Students' knowledge cultivation in the IBL projects



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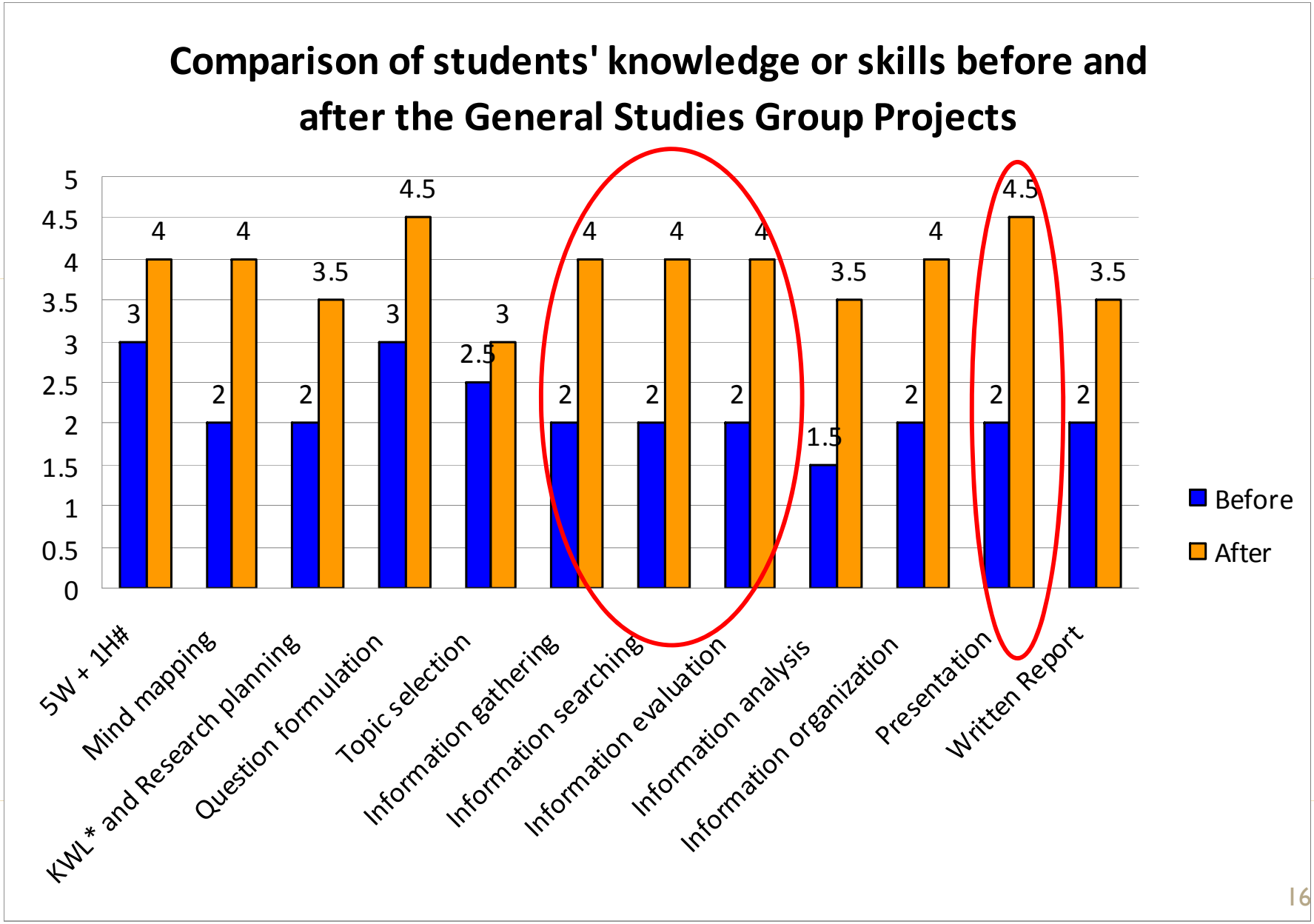

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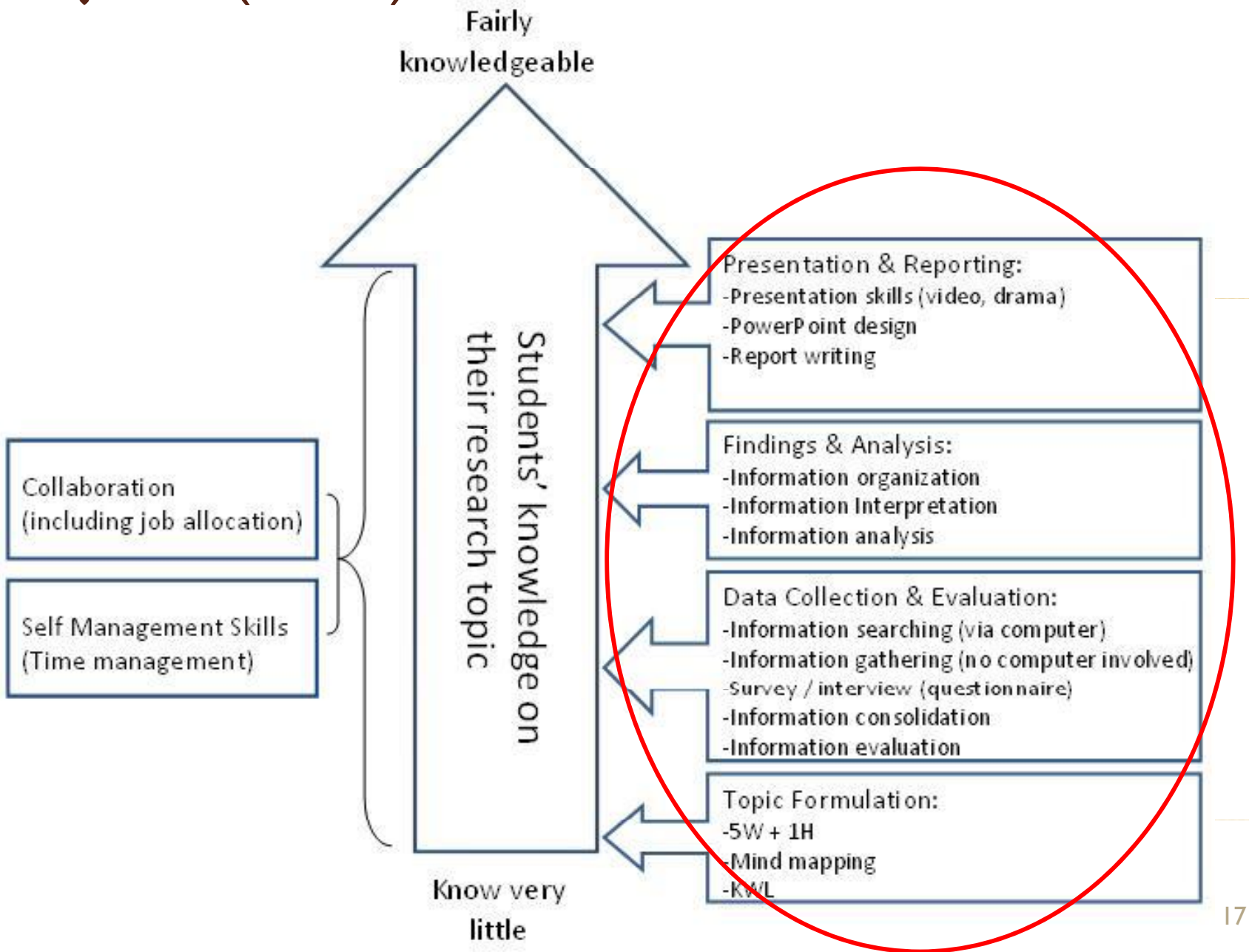

Students' knowledge cultivation in the IBL projects (con't)

Teachers' evaluation criteria			Average Points* in year 2007	Average Percentage in year 2007	Average Points in year 2006	Average Percentage in year 2006	Average Points Difference between 2007 and 2006	Percentage difference
Creativity	Question formulation	Creativity	2.45	81.67%	2.06	68.67%	0.39	18.79%
		Research value	2.50	83.33%	2.06	68.67%	0.44	21.21%
		Feasibility	2.40	80.00%	1.71	57.00%	0.69	40.00%
Collaborative Skills	Research planning	Job allocation	2.30	76.67%	1.88	62.67%	0.43	22.67%
Research Skills	Information gathering and searching	Information source	2.60	86.67%	2.00	66.67%	0.60	30.00%
		Information quality	2.20	73.33%	1.81	60.33%	0.39	21.38%
	Questionnaire	Questionnaire design	2.25	75.00%	1.83	61.00%	0.42	22.73%
		Sampling (Target)	2.13	71.00%	1.58	52.67%	0.54	34.21%
Collaboration, Communication, and Problem solving Ability	Collaboration	Collaboration (Cooperation)	2.60	86.6%	2.06	68.67%	0.54	26.06%
Research Skills	Information organization	Information classification	2.80	93.33%	1.94	64.67%	0.86	44.52%
		Information consolidation	2.50	83.33%	1.75	58.33%	0.75	42.86%
Critical Thinking Skills	Information analysis	Information interpretation	2.40	80.00%	1.88	62.67%	0.53	28.00%
		Information evaluation	2.30	76.67%	1.63	54.33%	0.68	41.54%
Arithmetic Ability	Information analysis	Data analysis	2.40	80.00%	1.50	50.00%	0.90	60.00%
Communication Skills	Expression	Presentation skills	2.60	86.7%	2.06	68.67%	0.54	26.06%
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Topic Formulation

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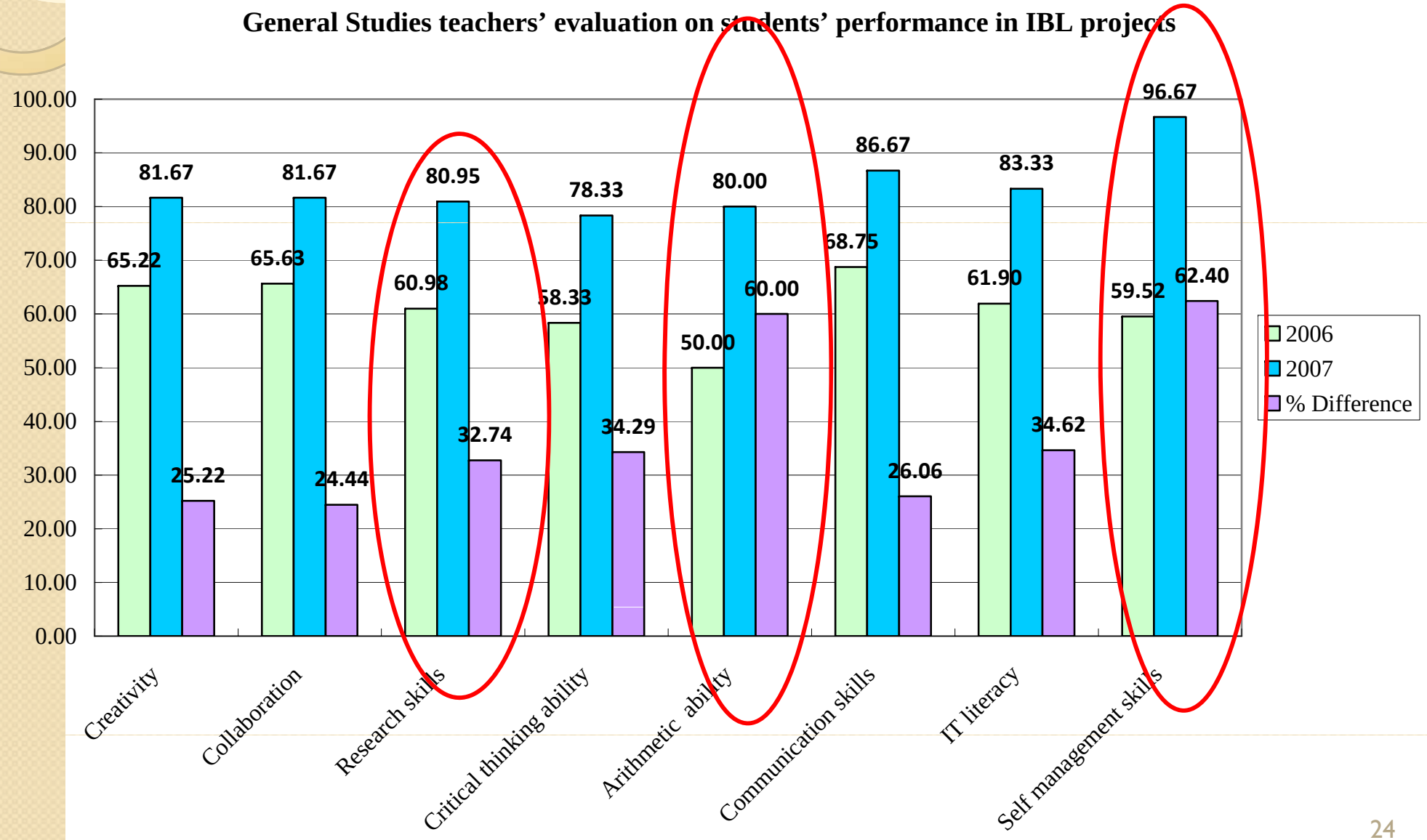
General Studies teachers' evaluation on students' performance in IBL projects



Conclusion

- The collaborative approach that involves three kinds of teachers and the school librarian in equipping students with knowledge and skills they need to conduct IBL projects works effectively
- Students' various basic skills were greatly enhanced
- General Studies teachers should take on a supporting role as a facilitator, advisor, and a guide in the students' inquiry learning process
- To promote students' autonomous learning through the projects, parents need to help their children as less as possible.
- Model of students' knowledge cultivation process
- Primary 4 students this year achieved a much higher quality in the General Studies projects when compared to students of last year, reflects that the 4-teaching staff approach in guiding students through IBL projects is indeed an excellent way of supporting students with what they need for the projects.

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End of Presentation