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 研究課題名(和文) Is An Alternative Concept of Learning Driving East Asian Academic Achievement?
Comparisons of PISA Performance with Implications for Policy Reforms

 研究課題名(英文) Is An Alternative Concept of Learning Driving East Asian Academic Achievement?
Comparisons of PISA Performance with Implications for Policy Reforms

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研究成果の概要(和文)：この3年間のプロジェクトで、私は、東アジア諸国が国際学力比較テスト(とくに、PISAなど)において優れた成績を収めている根本的理由を調べた。日本を含む東アジア諸国はつねに成績の最高位を占めてきた。しかし、それがなぜなのか、十分な研究が行われてきたとは言いがたい。ほとんどの場合、東アジアの好成績は、受験地獄、塾通い、過度の競争を促す強いプレッシャーなどの結果として理解されてきた。この3年間のプロジェクトにおいて、私はこれらのネガティブな要因のほとんどが説明能力を持たないことを経験的データによって明らかにし、東アジアが学びに対して西洋と異なったアプローチをしていることへの注意を喚起してきた。

研究成果の学術的意義や社会的意義

The academic significance of this project are multiple. First and foremost, it provides a new perspective on student achievement in East Asia, especially Japan. By extension this challenges the normal portrayal of Japan as in deficit, instead arguing the case for difference and mutual learning.

研究成果の概要(英文)：This three year project sought to understand the underlying basis for East Asia's superior cognitive performance in international large-scale student learning assessments, in particular PISA. Since the 1960s when Japan first started participating in the IEA studies, then again in the new PISA exams, Japan and East Asia have consistently scored among the highest. Nevertheless, there has been a dearth of rigorous analysis of why this is the case. That is, most of the time this performance is understood as a result of Exam Hell, high levels of private tutoring, stress inducing competition, etc. During this three year project, I was able to eliminate most of the negative factors (stereotypes), calling attention to alternative approaches to learning (including underlying epistemic and ontological beliefs). Based on this it was found that curriculum, classroom practices, and even various aspects of policy reflect this alternative system. This cautions against hasty reforms.

研究分野：教育社会学

キーワード：educational achievement PISA ontology learning East Asian education high performance se lf

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1. 研究開始当初の背景

One recent development in educational research is the emergence of large-scale international achievements tests, most notably the OECD's Programme for International Student Achievement (PISA). These studies show which students in the world perform highest (in math, science, and reading) and also provide a wealth of supplementary information on students' attitudes and classroom experiences. Previous studies utilizing this new PISA data have focused mainly on the relationship between cognitive skills (as measured by achievement scores) and economic growth rates among nations (e.g., Hanushek & Woessman, 2015) or have attempted to explain the reasons for high achievement in the PISA 'winner' Finland (e.g., Sahlberg, 2006, Simola 2005).

Within this body of research, however, the consistently high performance of East Asian students remains a puzzle. Hanushek and Kimko (2000) show that when scores for all international achievement tests are combined into one composite index, 6 of the top 10 highest performing countries are in East Asia: Japan, China, Hong Kong, Singapore, Taiwan, and South Korea (in that order). However, these authors do not attempt to understand the factors behind this. Recognizing this, several subsequent studies (Leung 2006; Fu and Markus 2014; Jerrim 2015; Komatsu and Rappleye 2017) attempted to identify causes for why East Asian countries outperform their Western counterparts. The causes hypothesized are listed in Figure 2.

However, the real cause still remains a puzzle. This is because most of these previous studies were based on simple correlation between PISA score and the factors predetermined as the cause by the authors. Some of these possible causes are most likely the real causes, with the other factors not independent but forming one coherent system. But these interconnections cannot be examined because of the methodological limitation of simple correlation between PISA score and proposed causal factors.

This study attempted to overcome this limitation. It recognizes that we now have more resources, i.e., PISA scores, PISA questionnaire data, indigenous philosophies/theories of learning, and observations of teaching/learning practices comparing East Asian and Western countries conducted in the past (1980s-1990s) and present (e.g., Tobin, Hsueh, Karasawa 2009). There have been very few studies utilizing all of these new resources effectively to explain the variations achievement revealed by PISA scores. One major reason for this is probably the fragmented state of educational research (i.e., education philosophers/theorists do not use empirical data, while empirically inclined scholars utilize limited philosophy/theory to interpret their findings). This study attempts to take up the challenging role of bridging philosophy and empirical data and proposing an evidence-based, systematic understanding of why East Asian countries outperform Western countries academically.

2. 研究の目的

This three year project sought to understand the underlying basis for East Asia's superior cognitive performance in international large-scale student learning assessments, in particular PISA. Since the 1960s when Japan first started participating in the IEA studies, then again in the new PISA exams, Japan and East Asia have consistently scored among the highest. Nevertheless, there has been a dearth of rigorous analysis of why this is the case. That is, most of the time this performance is understood as a result of Exam Hell, high levels of private tutoring, stress inducing competition, etc. During this three year project, I was able to eliminate most of the negative factors (stereotypes), calling attention to alternative approaches to learning (including underlying epistemic and ontological beliefs). Based on this it was found that curriculum, classroom practices, and even various aspects of policy reflect this alternative system. This cautions against hasty reforms.

3. 研究の方法

The study proceeded in three steps. First, it analyzed the PISA data from 2000-2015. Next, it sought a deeper understanding of these statistical correlations through additional resources, including indigenous (i.e., non-Western) theories of learning and qualitative empirical studies. Comparisons between Taiwan, China, and Japan will show variations *within* in East Asia, whilst comparisons with the UK and USA will show East Asian variation from the dominant Western paradigm.

4. 研究成果

The results of these studies were published in a series of papers from 2017 – 2020. Below, I highlight the major findings. Links to the published papers are provided.

1. Japanese and East Asian students do not necessarily obtain higher PISA scores due to longer hours of study hours or higher rates of exam related pressure. As shown in these graphs and developed in the two papers listed, Japanese students actually study less and feel less pressure than many of their Western counterparts.

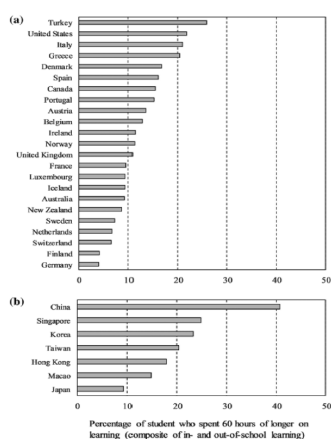


Figure 2. Percentage of 15-year-old students who spent 60 hours or longer on learning: (a) OECD countries excluding Japan and Korea; and (b) East Asian countries. The time spent on learning in this figure is the composite of in- and out-of-school learning. The original data were derived from OECD (2017).

Publications:

Rapplee, J.* and Komatsu, H. 2019. **Is Exam Hell the Cause of High Academic Achievement in East Asia? The Case of Japan and the Case for Transcending Stereotypes.** British Educational Research Journal, 44(5): 802-826.

Hyperlink – [Click Here](#)

Rapplee, J.* with Komatsu, H. 2018. **Stereotypes as Anglo-American Exam Ritual? Comparisons of students’ exam anxiety in East Asia, America, Australia, and the United Kingdom.** Oxford Review of Education 44(6): 730-754.

Hyperlink – [Click Here](#)

2. Japanese and East Asian students do not necessarily score higher on PISA due to involvement in after school tutoring and/or cram schools. As shown in the figure, Japan scores one standard-deviation, on average, than other PISA scoring countries, but at both the 4th and 8th grade level. Given that juku attendance is not strong in the 4th grade, particularly in science, we can conclude that this is not caused by juku attendance. See full papers for a fuller account.

Table 1
Achievement of Japan and other regular participants in TIMSS (England, Hong Kong, Hungary, Iran, Norway, Singapore, Slovenia, and the United States)

	Japan (points)	Mean of regular participants (points)	SD of regular participants (points)	Japan-Mean (points)	(Japan-Mean) /SD
2015					
Math, 4 th grade	593	536	57	57	1.01
Math, 8 th grade	586	526	54	61	0.90
Science, 4 th grade	569	529	48	41	1.18
Science, 8 th grade	571	529	39	42	0.94
2011					
Math, 4 th grade	585	531	53	54	0.98
Math, 8 th grade	570	514	57	56	1.02
Science, 4 th grade	559	524	36	35	1.01
Science, 8 th grade	558	527	32	31	1.04
2007					
Math, 4 th grade	568	520	62	48	1.30
Math, 8 th grade	570	510	55	61	0.91
Science, 4 th grade	548	524	44	24	1.81
Science, 8 th grade	554	523	32	31	1.03
2003					
Math, 4 th grade	565	508	62	57	1.10
Math, 8 th grade	570	511	59	59	1.00
Science, 4 th grade	543	510	47	33	1.44
Science, 8 th grade	552	527	36	25	1.45
1995					
Math, 4 th grade	567	499	58	68	0.86
Math, 8 th grade	581	513	53	68	0.79
Science, 4 th grade	553	495	48	58	0.83
Science, 8 th grade	554	521	31	34	0.92

Note: Original data for the regular participant countries are shown in Table A1 in the Appendix. Data for 1995 were inconsistent between older and more recent TIMSS reports. We used data derived from recent TIMSS reports (TIMSS & PIRLS International Study Center, 2018a, pp. 27–30; TIMSS & PIRLS International Study Center, 2018b, pp. 34–37). We confirmed that our conclusions hold even when using data derived from old TIMSS reports (e.g., TIMSS International Study Center, 1997a, p. 24; TIMSS International Study Center, 1997b, p. 22).

Publications:

Rapplee, J.* with Komatsu, H. 2020. **Is Shadow Education the Driver of East Asia’s High Performance on Comparative Learning Assessments?** Education Policy Analysis Archives, 28(67): 1-25

Hyper-Link – [Click Here](#)

2. Having eliminated several of the major stereotypes of Japanese and East Asian achievement I think shifted to understand indigenous theories of learning, teaching, and different ontological foundations of East Asia schooling. As these papers do not lend themselves to easy

visualization I have simply listed them here, followed by a brief explanation of the findings:

1. Rappleye, J.* with Komatsu, H. 2017. **A PISA Paradox? An alternative theory of learning as a possible solution for variations in PISA scores.** *Comparative Education Review*, 61(2): 269-297.

Hyperlink – [Click Here](#)

This paper utilizes PISA data to find that Japanese students maintain a level of achievement despite having low-levels of students initiative. This suggests an alternative model of learning, which we elaborate through the notion of horizons of learning.

2. Rappleye, J.* & Komatsu, H. 2017. **How to Make Lesson Study Work in America: A Japanese Perspective.** *Research in Comparative and International Education*, 12(4): 398-430.

Hyperlink – [Click Here](#)

This paper looks closer at the alternative notions of learning inherent in the Japanese practice of Lesson Study (授業研究). It suggests that the non-hierarchical focus on relations reveals an indigeneous approach to learning that is different than the cognitive, ‘objective’ view found in Best Practice approaches.

3. Rappleye, J.* & Komatsu, H. 2020. **Reimagining Modern Education: Contributions from Modern Japanese Philosophy and Practice?** *East China Normal Review of Education*, 3(1): 20-45.

Hyperlink – [Click Here](#).

This paper looks more carefully at the onto-epistemic foundations of the alternatives sketched out in the two papers from 2017. It suggests that the categories of relatio and the notion of negation are more important in the Japanese notion of learning than in Western accounts built on substantia.

Through this series of papers, I believe the 3-year research project has helped suggest that there is, indeed, an alternative theory of learning underpinning Japanese (and perhaps wider East Asian) achievement. This project has thus been successful in achieving its goal, and can be follow-up in future studies that will further elaborate this ‘implicit cultural logic’ underpinning Japanese (and perhaps East Asia) educational practices.

5. 主な発表論文等

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1. 著者名 Silova Iveta, Rappleye Jeremy, Auld Euan	4. 巻 1
2. 論文標題 Beyond the Western Horizon: Rethinking Education, Values, and Policy Transfer	5. 発行年 2020年
3. 雑誌名 Handbook of Education Policy Studies	6. 最初と最後の頁 3~29
掲載論文のDOI (デジタルオブジェクト識別子) doi.org/10.1007/978-981-13-8347-2_1	査読の有無 有
オープンアクセス オープンアクセスとしている (また、その予定である)	国際共著 該当する
1. 著者名 Silova Iveta, Rappleye Jeremy, You Yun	4. 巻 3
2. 論文標題 Beyond the Western Horizon in Educational Research: Toward a Deeper Dialogue About Our Interdependent Futures	5. 発行年 2020年
3. 雑誌名 ECNU Review of Education	6. 最初と最後の頁 3~19
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1. 著者名 Rappleye Jeremy, Komatsu Hikaru	4. 巻 1
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3. 雑誌名 Compare: A Journal of Comparative and International Education	6. 最初と最後の頁 1~19
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1. 著者名 Komatsu Hikaru, Rappleye Jeremy	4. 巻 3
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1. 著者名 Hikaru Komatsu, Jeremy Rappleye	4. 巻 44
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3. 学会等名 Innovations in Global Learning Metrics: a focused debate among users, producers and researchers (招待講演)
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4 . 発表年 2017年 ~ 2018年

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2. 発表標題 Commentator on UNESCO's "Rethinking Schooling for the 21st Century"
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4. 発表年 2017年～2018年

〔図書〕 計1件

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2. 出版社 Routledge	5. 総ページ数 278
3. 書名 High School for All in East Asia: Comparing Experiences	

〔産業財産権〕

〔その他〕

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6. 研究組織

氏名 (ローマ字氏名) (研究者番号)	所属研究機関・部局・職 (機関番号)	備考