# 期刊論文撰寫與修改心得分享

Shared at 高雄醫學大學on May 6th, 2016

國立中山大學 林煥祥

演講重點

1. 從教學中找到期刊論文發表的切入點。
2. Critical components of a journal article.
3. 深入了解審查意見之要求。
4. 具體回應並於Response letter 中說明。
5. Sample Response letter: Jack, B., **Lin*, H.**, & Yore, L. (2014). The synergistic effect of affective factors on student learning outcomes. *Journal of Research in Science Teaching, 51*(8), 1084-1101. (SSCI). *(Corresponding author) (Rank: 6/219=2.74%, IF=3.020).
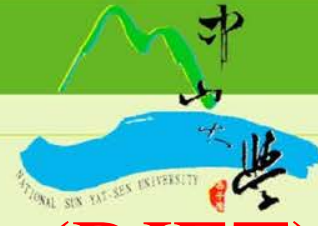
Key components of a journal article (BJET)

1. What is already known about this topic?
2. What this paper adds.
3. Implications for practice and/or policy.
4. Theoretical background of your intervention (if there is any).

如何由教學之中尋找研究主題？

Reflection on:

What are critical issues that have been discussed in my research community? (Identify research questions)

針對論文主題相關的文獻，條理分明而且明確的指出why your study is necessary; what significance and uniqueness your study are equipped with; how your study is different from previous studies.

以我的研究為例:

Lin, H., Hong, Z., & Chen, Y. (2013). Exploring the development of college students' situational interest in learning science. *International Journal of Science Education 35*(13), 2152-2173.
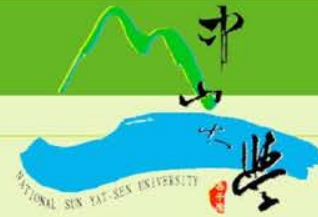
該領域發展趨勢：Publication of journal articles related to interest has grown quickly. In the past three years, publication frequencies in the International Journal of Science Education have increased from 5 (2009), 16 (2010), to 22(2011).

相關的學習理論:

The perspectives of constructivist theory suggest that meaningful learning requires learners' motivation and active participation (Driver, 1989; Tobin, 1993). With additional evidence, Strike and Posner (1992) also claimed that in addition to the cognitive process, emotional factors in motivating learners' participation also play a key role in the rational process of learning.

目前相關的研究:

These perspectives have contributed, at least in part, to inspire a growing number of researchers in the past decade who focus on learners' interest (Hidi, 2001; Laukenmann et al., 2003; Maltese & Tai, 2010; Nieswandt, 2007a; Palmer, 2009)
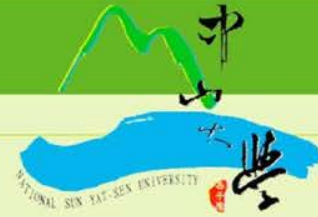
目前相關的研究:

Along similar lines, some international assessments of student learning (e.g., the Programme for International Student Assessment, PISA or the Trends in International Mathematics and Science Study, TIMSS) analyze data collection and report on student interest. The publication of students' interest level in these large-scale studies plays a significant role in reminding educational stake holders that student interest is deserving of our attention.

Reflection on: How can I justify the rationale of my study? (Review, analyze, and integrate literature)

Despite research findings reveal that interest tends to be influential in promoting student attention (Ainley, Hidi, & Berndorff, 2002) and levels of learning (Renninger, Ewen, & Lasher, 2002), typical teachers continue to experience difficulty or do not understand that they can motivate their students' learning interest (Lipstein & Renninger, 2006).

Although considerable research studies have concluded the importance of interest and investigated its relationship with engagement in and outcome of learning science, limited attention has been paid to investigate the development of student interest in learning science. We are inspired by existing literature to propose an approach for identifying how student interest, especially the interest of learning science, can be effectively promoted.

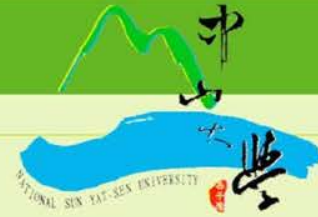# Sample teaching strategies used to ignite student interest
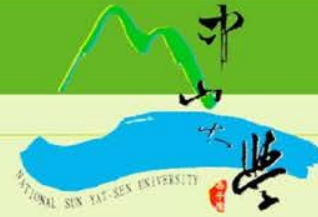
1. 蘋果氣球
2. 不漏水的紗網

Sample of my response letter
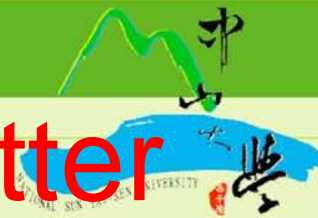
Abstract of my article

This study investigates how affective and self-related factors impact participation in science learning and environmental awareness and responsibility. Using PISA 2006 datasets from Taiwan and Canada having similar level of science competency, the model for this study verifies and expands an earlier model by examining the relationships among science-related interest, enjoyment, self-efficacy, self-concept, leisure time engagement, and future intended interest in science and how these relationships synergistically interact with environmental awareness and responsibility.
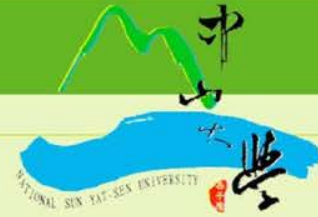
Abstract

The most consistent finding revealed that students' science self-concept in both groups was weakly associated with future intended interest and engagement in science learning and with their sense of environmental awareness and responsibility. Reasons for this phenomenon and possible causes underlying why students' science self-concept was weakly connected to their future intended interest in science learning are also presented. Finally, how the results of this study are important to science education instruction and research are forwarded in which students' identity and beliefs about self in science need to part of the next generation of science education reforms.
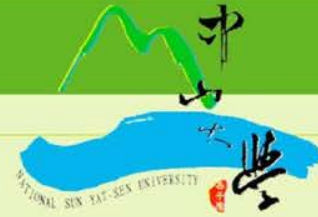
Editor's concern

Re-focus your literature review on predictors of environmental awareness and responsibility: In your Introduction section, you reviewed a number of constructs including scientific literacy, environmental literacy, democratization of science, and post-normal science. These constructs are much broader than what your data and analysis can address in your study. Please re-focus your literature review on environmental awareness and responsibility, and their predictors related to school children. Your literature review should center on the theoretical model you proposed to test in Figure 1. Pertinent theories underlying the theoretical model should be explicitly reviewed.
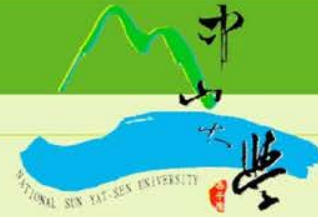
My response

Our introduction and literature review (pp. 3 –4) have been revised to refocus more specifically on theories which reflect our model. Our discussions on democratization of science and post-normal science have been removed from our manuscript to align with the deletions made in the introduction.
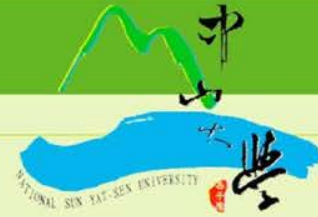
Editor's concern

Please note that engagement in preferred science activities and future interest in science (FII) are not equivalent to scientific literacy, and environmental awareness and responsibility are not equivalent to environmental literacy.
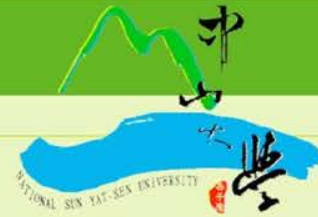
My response

Our manuscript (pp. 3 –4) has been revised to reflect that engagement and FII are not equivalent to science literacy but are important aspects of science learning.
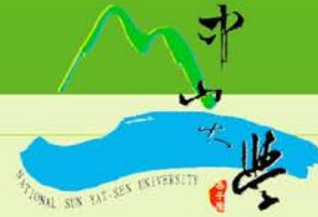
Editor's concern

Explicitly state the significance of the study: Given the above re-focused literature review and your publication (Author, 2012), you should explicitly state how your study contributes to new knowledge and has implications for improving practice.

My response

Our manuscript (pp. 13 – 14) has been revised and elaborated to show the significance of this study and how it contributes to new knowledge for the purpose of improving practice and informing future research.

"The present study attempted to replicate this model building–verification–expansion process using the model proposed by Lin, Lawrenz et al. (2013). First, we verified this 6-factor model among Taiwanese students using the 2006 PISA dataset. Second, we verified the model for Canadian students whose 2006 PISA performance was similar to the Taiwanese students but whose culture and language are different. Our purpose here was to cross-validate the fitness of the 6-factor model. The results of these analyses revealed that the original 6-factor model was robust for cultures of two different customs and language traditions."

Editor's concern

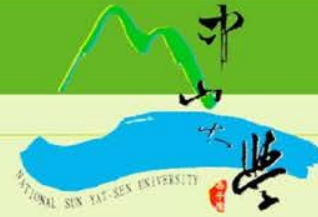Provide information on validity of measures related to the constructs included in your SEM model in Figure 1: In your Methodology section, you provided internal consistency reliability evidence for the variables included in your SEM model; however information on the validity of these measures is missing. Please provide pertinent evidence to support the validity of the measures for the constructs in terms of the literature you reviewed in the Assessed Factors.
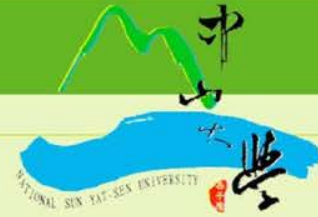
My response

Our manuscript (pp. 7 – 9) has been revised considerably to address this concern about the psychometrics and the range of procedures used to establish or report validity and reliability.

"Factor analysis was used to explore the structural validity of the measures and confirm the intended design structure. Confirmatory factor analysis using 8,815 Taiwan participants revealed that all items loaded on intended factor and the specific factor loadings for the items related to science interest (.73–.81), enjoyment (.81–.90), self-efficacy (.65–.73), self-concept (.84–.89), engagement (.63–.80), environmental awareness (.70–.83), and environmental responsibility (.58–.76). All of these factor loadings were statistically significant ($p < 0.01$). Similar factor analysis using 22,646 Canadian participants confirmed the item-factor structure with significant ($p < 0.01$) loadings of all items in their intended factors (.62–.75, .85–.92, .68–.72, .72–.82, .46–.81, .64–.76, and .66–.73, respectively)."
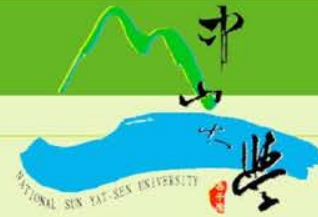
Editor's concern

Finally, as reviewer 1 states the writing styles is somewhat minimalistic in that it presented propositions and research, but did not fully develop the intellectual arguments so that they created a narrative that was easy to follow. We agree with this comment and encourage to build out your arguments. Specifically, when you revise your manuscript, please refrain yourself from over-generalizing. For example, democratizing science is a much more comprehensive construct than what your current study could address; you may drop this construct without losing the essence of your study. Please make sure that your entire manuscript flows logically from one section to another.
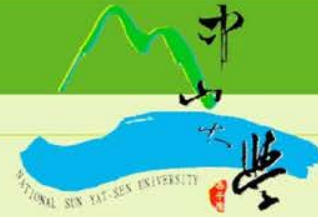
My response

We have amended our manuscript to focus more specifically on theories and literature that support our model and removed our discussions on democratization of science and post-normal science. We also established a pattern of backings, procedures, data, claims and explanations that clearly focused on verifying the original model and once verified expanded the model to more accurately reflect pro-environmental attributes of awareness and responsibility. This we believe that these corrections have addressed your concern.
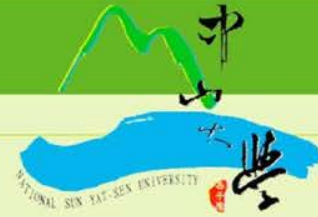
My revision in maintext

"What is critical to students' lifelong learning of science is their science identity and self where science is an object of interest and relevant to their personal and social lives. Such interest transforms students by expanding their emotion-related and value-related awareness of learning in a new, exciting, and meaningful way (Eccles, 2007; Pekrun, 2006; Pekrun et al., 2002). This interaction between affective and self-related cognition factors influencing both attitudes toward science learning and environmental awareness and responsibility is what we define as the synergistic effect of affective factors on student learning outcomes; therefore, we view such student attitudes toward science learning and environmental awareness and responsibility as itself a priority student learning outcome."

Editor's concern

Finally, to ensure that you are aware of the most current research conversations in our field, we ask that you take this opportunity to update your literature review & discussion to include relevant recent references from JRST and other prominent outlets (in the last 2 years).

My response

The following articles have been added in response to this concern.

Birmingham, D., & Barton, A. C. (2014). Putting on a Green Carnival: Youth Taking Educated Action on Socioscientific Issues. Journal of Research in Science Teaching, 51(3), 286-314. doi: 10.1002/tea.21127
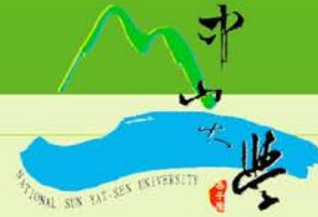
Martınez, J. F., Borko, H., & Stecher, B. M. (2012). Measuring Instructional Practice in Science Using Classroom Artifacts: Lessons Learned From Two Validation Studies. Journal of Research in Science Teaching, 49(1), 38–67.

Tal, T., & Morag, O. (2013). A Longitudinal Study of Environmental and Outdoor Education: A Cultural Change. Journal of Research in Science Teaching, 50(9), 1019-1046.
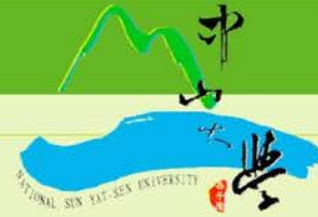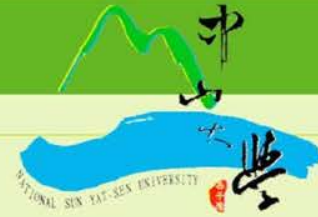
Reviewer 1's comment

The writing was rather minimalistic in that it presented propositions, and research, but did not fully develop the intellectual arguments so that they created a narrative that was easy to follow. There is something missing between the beginning argument about democratization of science-related issues by bringing them into the public domain for discussion and the actual research with the PISA variables.

My response

Our argument about democratization of science has been removed to address your concern regarding the "minimalistic" issue and greater emphasis was placed on theories which reflect our model (pp. 3 –4).
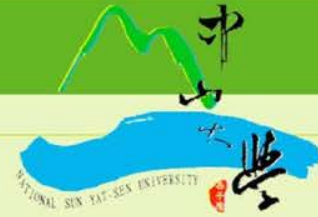
Reviewer 1's comment

After having read the article two times, it is still hard for me to articulate the significance of this work. The SEM models did not help elucidate this because all of the variables were significantly related to each other. The variables were defined prior to the methods section, but it was not stated that the same definitions articulated in the literature review were the same as those used by PISA to define the variables. There was not a list of items provided from the two assessments, which would help the reader answer this question on their own. The "theoretical model of science and environmental literacy" in figure 1 contains all of the variables tested.
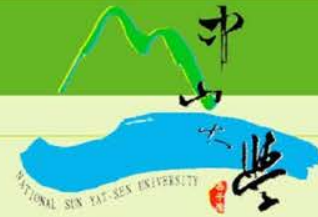
Reviewer 1's comment

The final sentence in the article states that the "synergistic interplay between students' science literacy and their environmental literacy…" indicates that these are two different things, yet they are never operationalized in the model—so it is unclear what is actually meant by science literacy or environmental literacy. The logic of this article needs to be more clearly articulated and gaps addressed for it to be useful to other readers. It remains unclear the general utility of the work, but perhaps with a more fully written narrative and clearer logical structure, this utility would be more evident.
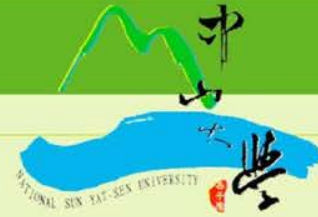
My response

Our manuscript (pp. 13 – 14) has been revised and elaborated to show the significance of this study and how it contributes to new knowledge for the purpose of improving practice and informing future research.

On pages 7 and 8, our manuscript has been amended to include specific information regarding how the variables of our model were defined and validated from literature.
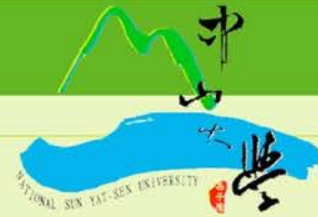
Our revised discussion section on pages 14 – 16 provides evidence on the operationalization of our model and how the results of our study relates to science and environmental literacy.

Issues regarding the gaps in our discussion have been cleared up in our revised manuscript in accordance with your concern.
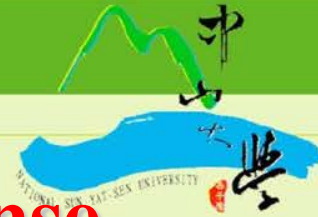
Reviewer 2's comment

The authors examined the PISA results of students from Taiwan and Canada, but they only explained on page 8 why they chose these two countries. Why not briefly explain on p 5 or in the abstract that these countries had similar scores? Otherwise, the rationale for choosing those two data sets was not clear till later.

My response

The following sentence has been added to the abstract to address your concern.

"Using PISA 2006 datasets from Taiwan and Canada having similar level of science competency, the model for this study verifies and expands an earlier model by examining the relationships among science-related interest, enjoyment, self-efficacy, self-concept, leisure time engagement, and future intended interest in science and how these relationships synergistically interact with environmental awareness and responsibility."
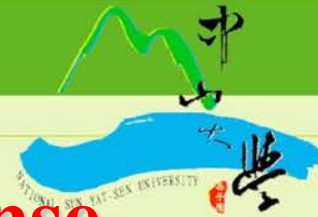
Reviewer 2's comment and my response

The last sentence of the very first paragraph ("The essential question...") is very long and a bit awkward. Can the authors modify the syntax?

The revision to the introduction and literature review (pp. 3 –4) does not include this sentence.

The subsection on Environmental Awareness did not flow as well as the previous section. Can the authors explain more clearly how "sense of identity" is related to self concept?

The subsection on Environmental Awareness has been revised on page 6 in response to this concern.

Reviewer 2's comment and my response

I wonder if it's worth a sentence or two explaining how PISA accounts for linguistic differences when being administered in different countries .

We have added the following addition to the discussion section to address this concern.
"Second, we verified the model for Canadian students whose 2006 PISA performance was similar to the Taiwanese students but whose culture and language are different. Our purpose here was to cross-validate the fitness of this 6-factor model. The results of these analyses revealed that the original 6-factor model was robust for cultures of two different customs and language traditions."
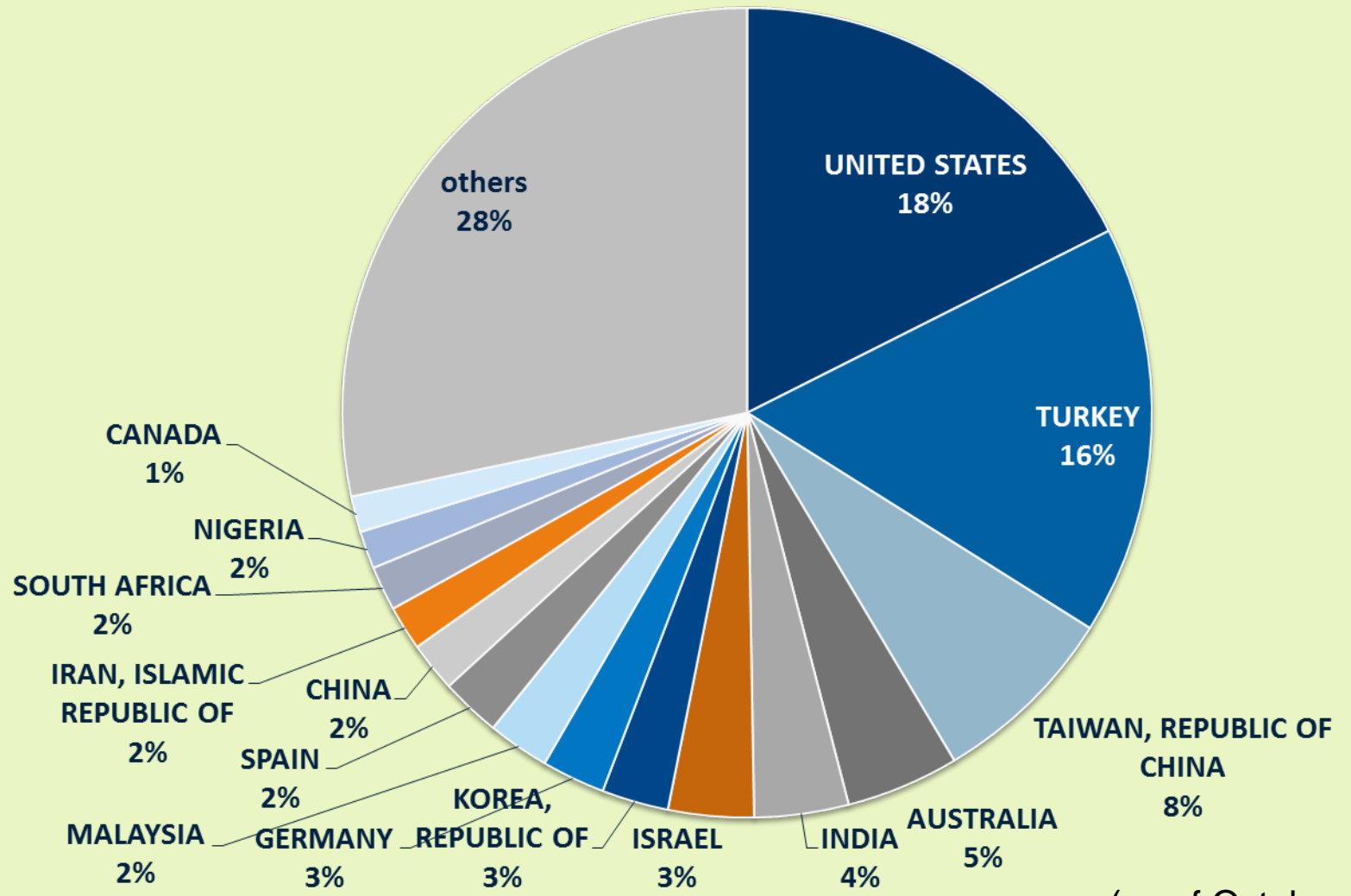
歡迎投稿

International Journal of Science and
Mathematics Education (IJSME)
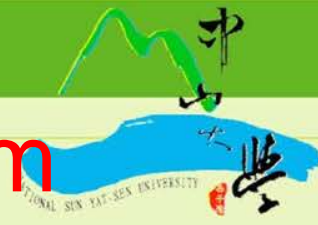
Submission by Country from 2011-2014
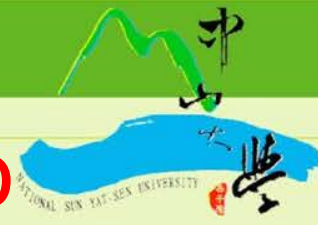

(as of October 7, 2014)

Impact Factor Variations over Years

Impact Factor

Number of Citations/Source Items

7

0.636

0.575

180

160

Quality Evaluation by SciMago Journal Report

International Journal of Science and Mathematics Education

Country: Netherlands

Subject Area: Mathematics | Social Sciences

Subject Category:

Q4 Q3 Q2 Q1

Category	Quartile (Q1 means highest values and Q4 lowest values)															
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
✓ Education						Q4	Q3	Q3	Q2	Q2	Q2	Q2	Q2	Q1	Q1	Q1
Mathematics (miscellaneous)						Q4	Q4	Q3	Q3	Q3	Q3	Q2	Q3	Q2	Q2	Q2

Publisher: Springer Netherlands. **Publication type:** Journals. **ISSN:** 15731774, 15710068

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H Index: 18

*2014 Ranking: 195/914 among education category

謝謝！

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