Content Analysis of International Research in Geographical and Environmental Education: Eighteen Years of Academic Publishing

Gillian Kidman
(Queensland University of Technology,
Brisbane, Australia)
g.kidman@qut.edu.au

Fivos Papadimitriou
(Environmental and Land Use Consultancies,
Athens, Greece)

Abstract

This paper examines the history of the IRGEE Journal in terms of its sustainable future. The development of geographical and environmental education is evaluated, as reflected from the articles published in the Journal "International Research in Geographical and Environmental Education" (IRGEE). A content analysis of all papers and forum sections which have appeared in the journal since Volume 1 Number 1 was published in 1992 has been conducted, examining the content of as many as 526 articles. The method was a content analysis, and revealed themes which have experienced an increasing or declining interest over the 18 years of publication of IRGEE (1992-2009), while other themes have remained current during this period. The main findings of this analysis are: a) the total number of articles has increased more than threefold, b) articles related to geographical education (sensu stricto) outweighed those related to environmental education, c) the themes "syllabi, textbooks, curricula" and "values, attitudes" attract the attention of researchers with increasing strength and d) emerging subjects, such as GIS and sustainability have appeared dynamically in the last years.

Key-words: Content Analysis, Geographical Education, Environmental Education

Introduction

Educational research has been called to be conducted to "inform educational judgements and decisions in order to improve educational action" (Bassey, 1995, p. 39). Whilst it is critical to conduct educational research to help tutors improve their practice, it is

also important to understand what has been studied in the past, and to determine what could be studied in the future. To follow how the field of Geographical and Environmental Education (GEE) has developed over time, we could investigate the educational reform movement (de Jong, 2007), or the development level of the academic environment (Fensham, 2004). Alternatively, we need to analyse what themes have been published, when and how their corresponding number of articles change over time. Such an analysis could be fruitful in our efforts to analyse what has been studied by researchers over the years that IRGEE was being published, to what extent and how do the themes relate to one another.

As outlined in an Editorial by Lidstone and Stoltman (2002), IRGEE was first issued in August 1992 and had a single issue in that year. With the year 1995, Volume 5 saw IRGEE increase to three issues per year, and from 2000, Volume 9, the journal has published four issues each year. Each issue has a common format: editorial, major papers, a forum and a review of books and relevant publications section. All these form a plethora of pages, ideas and words which combine to present a research period of great dynamism and vibrancy. Hence, in this paper we classify the content of the articles published and we give explanations of this publication history.

Methods

We begin by noticing that an analysis of key words (White, 1997) reveals shifts in emphases of research topics (although sometimes keywords can be misleading in characterising an article's content). Hence, to gain a detailed view of the GEE developmental trends as published in IRGEE from 1992 to 2009, the complete journal library was scrutinised. All articles published were read and categorised, along with all published editorials and forums. Following the methodology of Chang et al (2010), instead of matching each published item with a pre-set topic structure, the topics, themes and clusters developed

inductively as they emerged from the entire corpus of the 18 volumes from 1992 to 2009. This was therefore a grounded approach that provides educators, researchers, and policy makers an "overview of the structure and evolution of the field" (Chang et al, 2010, p. 318). Each published item was categorised into topics and topics were later grouped into themes. Clusters of themes then emerged. It needs to be acknowledged that there is an unavoidable level of imprecision associated with this classification exercise. Attempts have been made to retain literal interpretations, but this became difficult at times due to lack of key words associated with an item. Consequently, the structure and content of this paper follows a funnel analogy: a broad overview leading to a narrow, more specific content review.

Results

From 1992 to 2009, the 18 years period saw the publishing of 59 issues. A summary of published works in IRGEE can be found in Table 1.

Ten themes emerged from the content analysis which have been organised into three clusters. The first cluster labelled *Published Focus* has two themes: one relating to geography, and another to the environment. This is not surprising given the title of the journal. The second cluster is labelled *Curriculum and Pedagogy* which houses five themes. The third cluster relates to *Student Abilities and Attributes*, and included three themes. Table 1 also provides an indication of the number of key topics evident in each two year publishing period of IRGEE.

INSERT TABLE 1 HERE

Figure 1 provides a graphic of the relationship between key topics and time: as the years passed, the number of papers and key topics being published increased more than three-fold. In the first 3 issues of 1992 and 1993, there were 29 separate topics. These have steadily increased to just over 100 topics, being published in 8 issues in 2008 and 2009. When

considered on a per issue basis, the range over time is 7 – 12 topics communicated in each issue. The lower range items corresponded with the publication of special issues and lengthy forums in Volumes 11-14. Both the number of papers and key topics has increased over time.

INSERT FIGURE 1 HERE

Figure 2 indicates that there has been a steady increase in both the geographical and environmental foci since the initial issue of IRGEE. This is to be expected as reputation and distribution of the journal grew. Of particular interest is that for the majority of the time, Geographical Education out-published Environmental Education. The exceptions are Volumes 3 to 6 where environmental education is a predominant focus. The cause of this is possibly two fold. Firstly, there are several Forums in these four volumes which concern Environmental Education. The second cause for the predominance of Geographical Education is that in some regions of the world, North America for example (Lidstone & Stoltman, 2002), Environmental Education is seen as a component of the science education discipline, and not as a component of the geography discipline. Hence, North American scholars may have not been sending their Environmental Education research papers to IRGEE, and instead they may be opting for their own national science education journals.

INSERT FIGURE 2 HERE

The peak evident for Volumes 15 and 16 is due to a special edition (Vol 15, No 4). In this special edition, the research interests of the Geography team at the Institute of Education, University of London were shared. Upon examination of the five papers in this issue, the ideas predominantly relate to the teaching of geography. This concentration is reflected in the *Teaching and Teacher Education* peak in the Curriculum and Pedagogy cluster of Figure 3.

INSERT FIGURE 3 HERE

Figure 3 shows the fluctuating nature of the theme "*Teaching and Teacher Education":* 18% of published topics (and its associated *Syllabus & Textbooks, Curriculum, and Assessment* *15*% of published topics) in the field. The peak in Volumes 9 and 10 does not appear to relate to identifiable phenomena other than an average of nine papers per issue, as opposed to an average 5 papers in more recent issues. It is not surprising to see, that research involving computers and GIS began to appear in issues following 2001. This aligns with the introduction of computers into schools, and a GIS forum in Volume 15, Number 3. The theme of *Sustainability, Pollution and Global Warming* (10% of published topics) shows a steady increase over time. Research included in this theme highlight teaching issues concerning these topics. There is an abundance of such research that it warranted its own theme. Teaching issues relating to other topics, for example physical geography, are included in the *Syllabus & Textbooks, Curriculum, and Assessment* theme.

Figure 4 presents the final cluster of topics pertaining to Student abilities / attributes. Three themes were evident within this cluster. *Visual and spatial intelligences* and *mapping* - 9% of published topics - appear to be quite stable over time, despite a peak in Volumes 7 and 8. A close look at these two volumes fails to yield a reason for the sudden but unsustained peak interest in the visual abilities of students. Another unsustained peak relates to *inquiry and problem solving* abilities with 15% of published topics. Volumes 15 and 16 were published in the years 2006 and 2007, and at this time inquiry learning was having resurgence in science education literature (Kidman, in press). It is possible that some scholars work across both disciplines, and so a cross fertilization of ideas occurred. *Values, Attitudes and Student Choice* account for 19% of published topics (this being an area of increasing interest to scholars in the GEE fields).

INSERT FIGURE 4 HERE

Discussion

From the findings of the content analysis, we saw that the number of papers related to environmental education is lagging behind geographical education ever since 1997. This might make geography educators wonder about the relationships between these two fields of education. And this is particularly interesting, since our findings indicate, that (following a linear interpolation), papers in geographical education have a double annual rate of increase compared to those of environmental education (0.66 papers per annum in comparison to 0.33 papers per annum for environmental education).

This might lead us to consider another issue: the consideration of the distribution of articles within a given scientific field, which unavoidably reflects differences in perceptions of the same discipline (geography in this case) within different countries. Such differences have been documented in the cases of Hungary (Pecsi, 1988), the Czech Republic (Hampl, 1998) and Japan (Tomatsuri, 2001) and the findings can be completely unexpected. In the case of Czech geography for instance, there had been an emphasis on the differences between human geography and physical geography during the decade 1989-1998 (Hampl, 1998). After a detailed study of articles in geomorphology, Dorn (2002:667) wrote that "The very strong English-language bias of well-cited journal articles creates a geographical bias in study site selection, which may in turn bias geomorphic theory". Could this be the case in geographical education as well?

Might there be a biased view of geographical education because of an English-language bias? It might (Papadimitriou, 2001; Tan & Chang, 2008), but not in the case of IRGEE, because of its truly global coverage.

Another field of geographical education which presents a spectacular development in the last years is GIS education (Papadimitriou, 2010). In fact, early signs that this would happen were given at approximately the same time (Kidman & Palmer, 2006) as the time that

the interest in GIS education appeared in IRGEE (Lidstone & Stoltman, 2006). The launching of Google Earth in June 2005 may have also boosted the renewed interest in education in/about/with GIS and geospatial technologies. However, it is interesting to observe that these technologies seem to have replaced the theme "visual & spatial intelligence, mapping", which had a peak in 1998-9 and then declined. And upon the almost total decline of this theme (in 2006), the theme "GIS" appeared dynamically, therefore re-iterating the debate of whether geographical and environmental education are ahead or behind global issues (Lidstone & Stoltman, 2007).

Conclusion

In Summary, the results of this content analysis suggest interesting insights into what the editors and reviewers of IRGEE view as publishable. Table 1 suggests a broad interest with geographical research out-publishing environmental research almost consistently for the 18 years of this review. The published interests of the scholars writing for IRGEE have increased more than three-fold in this time. Topics which have steadily increased in publishing rates include:

- Syllabus & Textbooks, Curriculum, Assessment
- Sustainability, Pollution, Global Warming
- Values, Attitudes and Student Choice

Topics which have maintained a steady publishing rate include:

- Visual and Spatial Intelligence, Mapping
- Inquiry, Problem solving, Knowledge & Understanding.

There have been no topics that have decreased in popularity over time. All topics published in the early volumes are still viable in terms of today's publishing interests. A contributing factor to this is the recent interest from developing countries and scholars in the much older pedagogy of western countries. Only one new theme has appeared in the

publishing history of IRGEE – That of Tools, GIS & Computers, with increasing popularity. In fact, after 2006, the growth in GIS education seems to be increasing exponentially.

Consequently, it would seem appropriate to claim that this journal is a leading research outlet for academics and practitioners. The intent is to continue to encourage the high quality of research submissions from geography and environmental education scholars.

It is hoped that this study will help educators and researchers reflect on GEE trends and issues, to advance their understandings of their field, and to further explore their practices in teaching and research.

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Table 1. Clustered themes published within the volumes of IRGEE, 1992-2009

Themes		*Volumes and Years*								
		1& 2 1992-1993	*3 & 4 1994-1995*	*5 & 6 1996-1997*	*7 & 8 1998-1999*	*9 & 10 2000-2001*	*11 & 12 2001-2002*	*13 & 14 2003-2004*	*15 & 16 2005-2006*	*17 & 18 2008-2009* % *Total*
Geography/Geographical Education – 61 %	**Published Foci**	9	5	8	8	10	12	14	21	17
Environment/Environmental Education – 39 %		3	8	8	4	7	10	6	11	10
Syllabus & Textbooks, Curriculum, Assessment	**Curriculum and Pedagogy - 57 %**	3	1	4	3	8	7	5	13	10 *16*
Sustainability, Pollution, Global Warming		1	0	2	3	3	5	5	4	12 *10*
Cultural, Language, Political		1	2	1	4	4	5	3	0	7 *7*
Tools, GIS & Computers		0	0	0	0	0	1	0	8	10 *5*
Teaching & Teacher Education		3	6	4	4	14	5	2	16	11 *18*
Visual & Spatial Intelligence, Mapping	**Student Abilities and Attributes - 43 %**	2	5	1	11	3	5	2	1	3 *9*
Values, Attitudes & Student Choice		2	4	3	4	5	6	12	11	21 *19*

Inquiry, Problem Solving, Knowledge Understanding	5	4	5	5	6	5	6	12	6 *16*
Total **Citation rate (%) (mean = 0.81)**	**29 0**	**35 0.94**	**36 1.14**	**46 0.49**	**60 0.67**	**61 0.91**	**55 1.02**	**97 0.85**	**107 0.94**

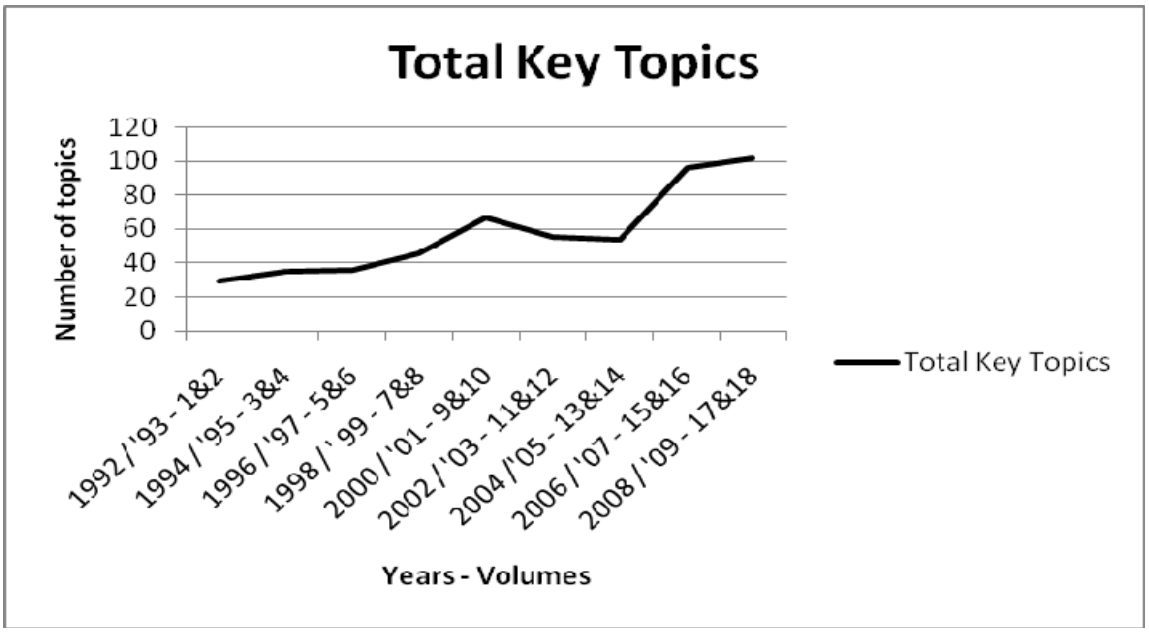

Figure 1. Overall Increase in number of key topics

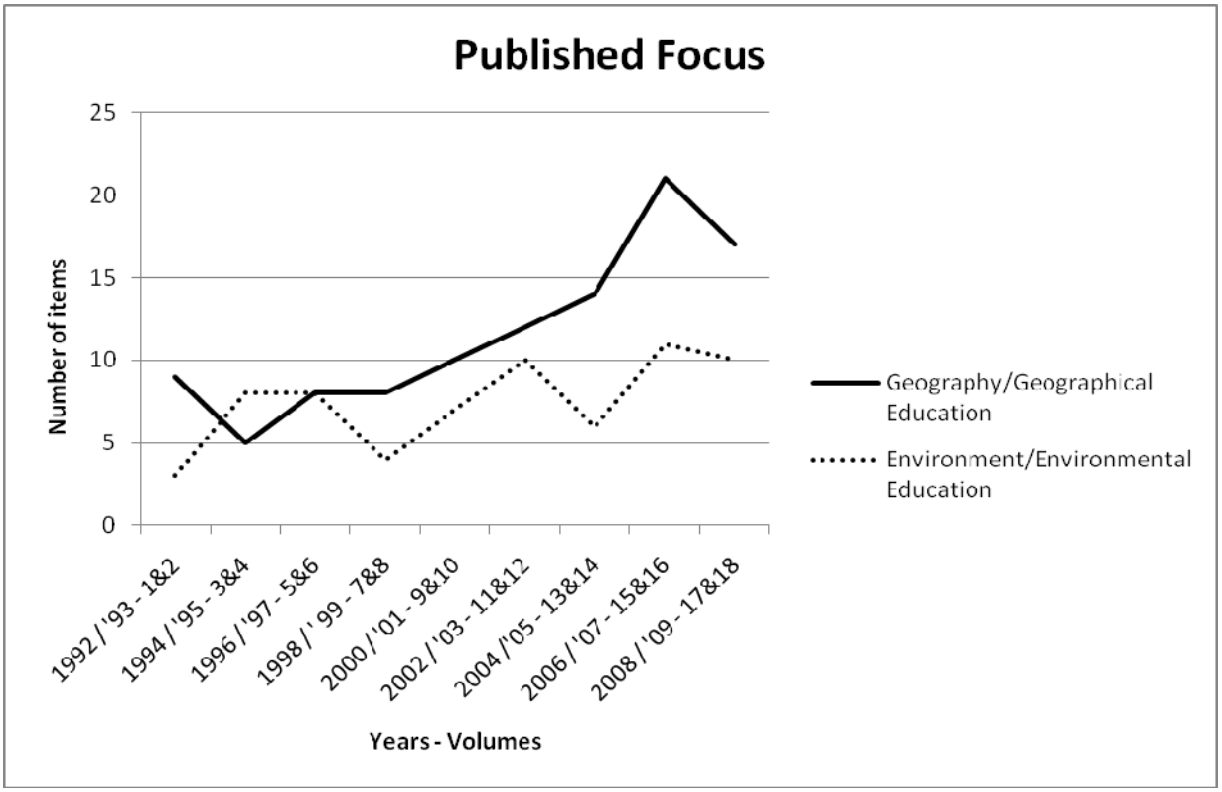

Figure 2. Split between geography and environmental education focus

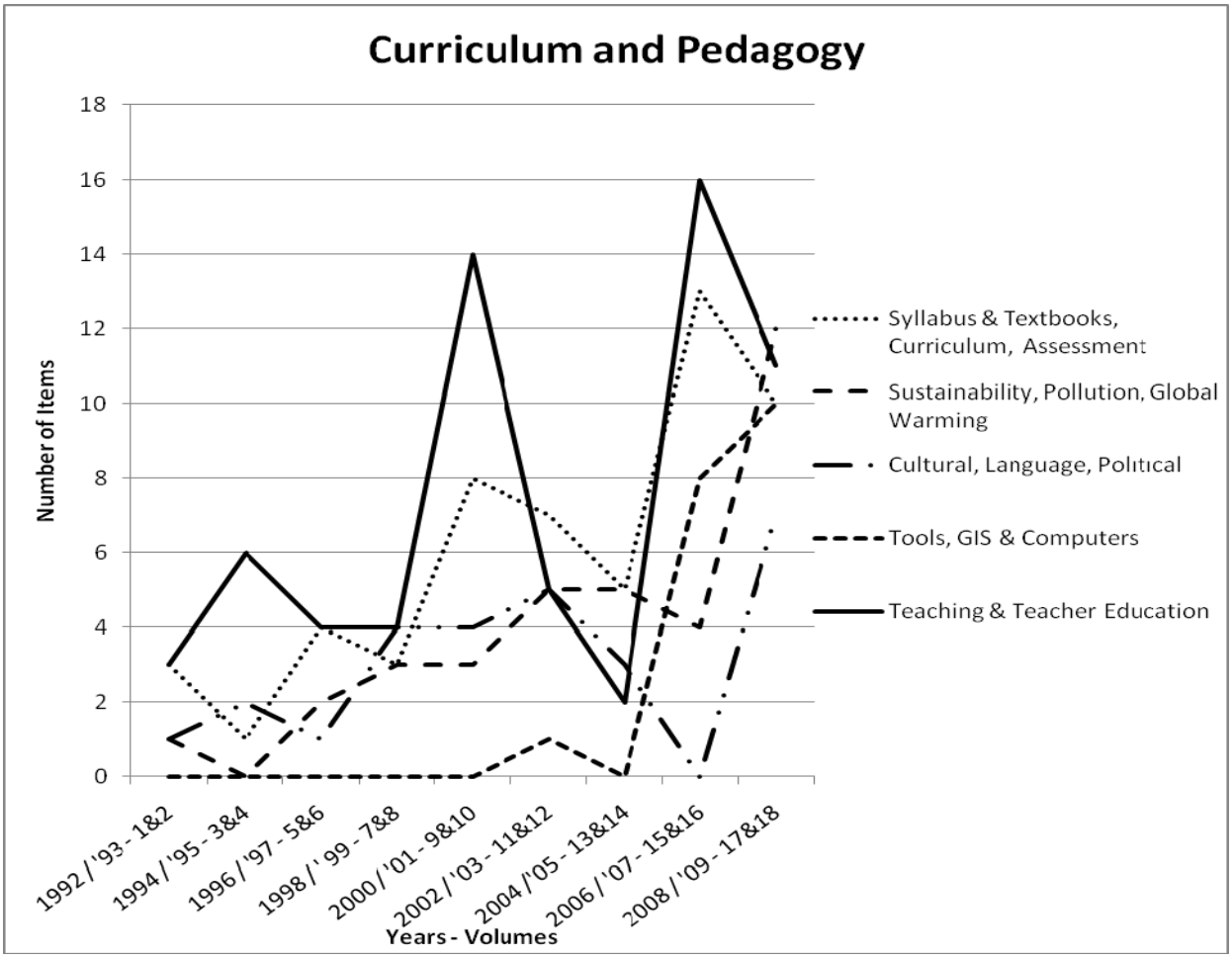

Figure 3. Variety of topics concerning curriculum and pedagogy

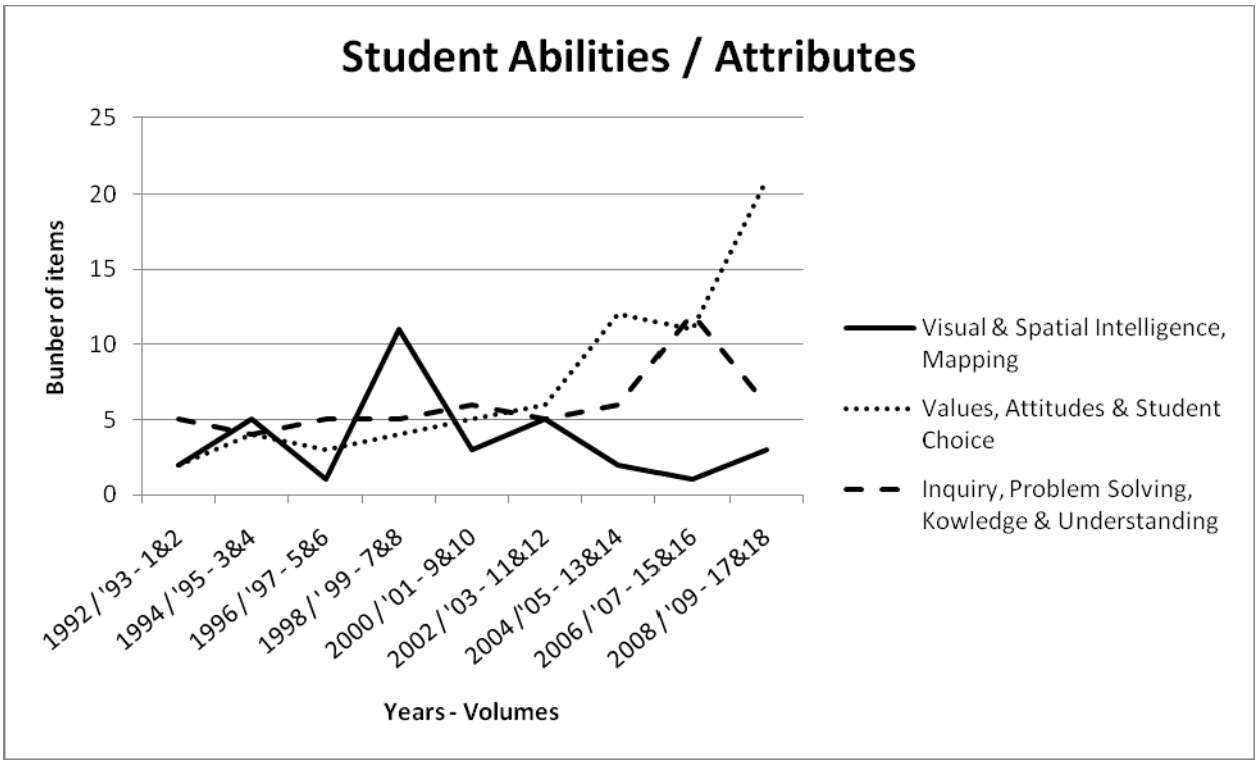

Figure 4. Variety of topics relating to student attributes