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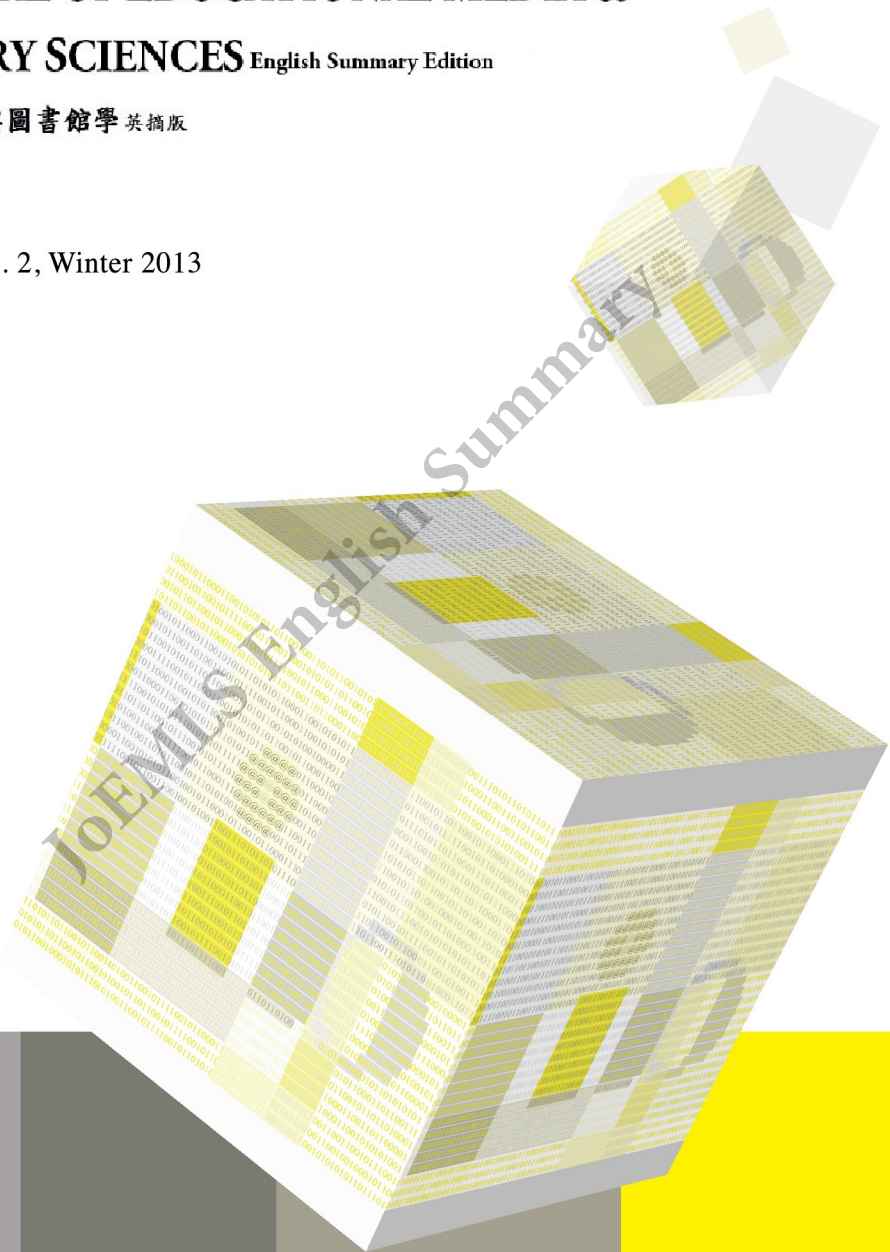
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教育資料與圖書館學，始於1970年3月創刊之教育資料科學月刊，其間於1980年9月更名為教育資料科學，改以季刊發行。自1982年9月起易今名，而仍為季刊，每年秋(10月)、冬(翌年1月)、春(4月)與夏季(7月)各出刊一期，合為一卷。現由淡江大學出版中心出版，淡江大學資訊與圖書館學系和覺生紀念圖書館合作策劃編輯。本刊為國際學術期刊，2008年獲國科會學術期刊評比為第一級，並廣為海內外知名資料庫所收錄(如下英文所列)。

The JOURNAL OF EDUCATIONAL MEDIA & LIBRARY SCIENCES (JoEMLS), published by the Tamkang University Press and co-published with the Department of Information & Library Science (DILS) and Chueh Sheng Memorial Library, was formerly the **Bulletin of Educational Media Science** (March 1970 – June 1980) and the **Journal of Educational Media Science** (September 1980 – June 1982). The *JoEMLS* has been a quarterly as well as a new title since September 1982, appearing in Fall, Winter, Spring and Summer issues.

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JoEMLS 編輯政策

本刊係採開放存取 (Open Access) 與商業資料庫付費途徑，雙軌發行之國際學術期刊，兼具電子版與紙本之平行出版模式。本刊除秉持學術規範與同儕評閱精神外，亦積極邁向 InfoLibrary 寓意之學域整合與資訊數位化理念，以反映當代圖書資訊學研究趨勢、圖書館典藏內容與應用服務為本；且以探討國內外相關學術領域之理論與實務發展，包括圖書館學、資訊科學與科技、書業與出版研究等，並旁及符合圖書資訊應用發展之教學科技與資訊傳播論述。

Open Access 典藏政策

JoEMLS 向來以「綠色期刊出版者」(Green Publisher / Journal) 自居，同意且鼓勵作者將自己投稿至 *JoEMLS* 之稿件，不論同儕評閱修訂稿與否，都能自行善加利用處理，但希望有若干限制：

- (1) 勿將已刊登之修訂稿 (post-print) 再自行轉為營利目的之使用；
- (2) 典藏版以期刊排印之 PDF 檔為首選；
- (3) 任何稿件之典藏版本皆須註明其與 *JoEMLS* 之關係或出版後之卷期出處。

JoEMLS Editorial Policy

The *JoEMLS* is an Open Access (OA) Dual, double-blind reviewed and international scholarly journal dedicated to making accessible the results of research across a wide range of Information & Library-related disciplines. The *JoEMLS* invites manuscripts for a professional information & library audience that report empirical, historical, and philosophical research with implications for librarianship or that explore theoretical and practical aspects of the field. Peer-reviewed articles are devoted to studies regarding the field of library science, information science and IT, the book trade and publishing. Subjects on instructional technology and information communication, pertaining to librarianship are also appreciated. The *JoEMLS* encourages interdisciplinary authorship because, although library science is a distinct discipline, it is in the mainstream of information science leading to the future of **InfoLibrary**.

Open Access Archiving

The *JoEMLS*, as a role of “OA green publisher/journal”, provides free access online to all articles and utilizes a form of licensing, similar to Creative Commons Attribution license, that puts minimal restrictions on the use of *JoEMLS*'s articles. The minimal restrictions here in the *JoEMLS* are:

- (1) authors can archive both preprint and postprint version, the latter must be on a non-commercial base;
- (2) publisher's PDF version is the most recommend if self-archiving for postprint is applicable; and
- (3) published source must be acknowledged with citation.

Contents

EDITORIAL

In and Beyond This Issue

Jeong-Yeou Chiu 197

RESEARCH ARTICLES

**Informetric Analysis on Open-Access
High Productivity Authors in
Biomedical Area**

Yen-Lin Wen, & Ji-Lung Hsieh 219

**An Analysis of Literature Searching Anxiety
in Evidence-Based Medicine Education**

Hui-Chin Chang, Chih-Lung Wu,
Pei-Chun Chao, Long-Yau Lin,
You-Tsz Yu, & Shan-Ju L.Chang 255

**Elementary Stuedents' Reading Behaviors
of E-Books with Different Adaptive Designs**

Pei-Yu Wang, Hsiu-Feng Wang, & Yi-Chun Liu 285

**A Study on Emotional Healing Efficacy of
Fiction for Undergraduate**

Chen Su-May Sheih, & Pi-Fen Chang Chien 323



EDITORIAL

In and Beyond This Issue

Since January 2014, *Journal of Educational Media and Library Sciences* has received two substantial government subsidies—one year “Editorial Subsidy for Scholarly Journal” and half-a-year “Subsidy for Journal Inclusion in International Citation Indices”, funded by the Research Institute for the Humanities and Social Sciences, National Science Council. The Editorial Subsidy for Scholarly Journal is a great help for the large expenditures of journal editing and personnel; without this subsidy, our journal editorial board would have to spare efforts for finding other financial resources, which would sacrifice our efforts for editorial quality. We are confident to say that our persistent hard-working definitely deserves a reward from this subsidy. According to the guidelines of the subsidy, *Journal of Educational Media and Library Sciences* will also provide book manuscript review services for scholars in the same professional field, and we see this assigned task our duty and honor.

The subsidy for Journal Inclusion in International Citation indices is another government funding for enhancing the visibility and impact of Taiwan academic research outcomes. Many competitors have strived for this honor, and only sixteen journals received it. We are proud to say that one of the 16 winners is *Journal of Educational Media and Library Sciences*, which was already collected in the Scopus database in 2005. We hope our journal will be also included in SSCI database in 2014.

For this issue (Volume 51, Issue 2), we received 12 manuscripts and rejected eight, with a manuscript rejection rate of 66.67%. Meanwhile, 17 manuscripts are still at the review stage. Four manuscripts accepted in this issue include “Informetric Analysis on Open-Access High Productivity Authors in Biomedical Area”, “An Analysis of Literature Searching Anxiety in Evidence-Based Medicine Education”, “Elementary Students’ Reading Behaviors of E-Books with Different Adaptive Designs”, and “A Study on Emotional Healing Efficacy of Fictions for Undergraduate”. Starting from this issue, readers should be able to notice that we have attached each author’s ORCID to manuscripts, which is a new milestone for our journal and a new paradigm for other scholarly journals in Taiwan. For authors who never used ORCID, this will be a new start for authority control of their academic publications.

Jeong-Yeou Chiu
JoEMLS Chief Editor



Informetric Analysis on Open-Access High Productivity Authors in Biomedical Area

Yen-Lin Wen^{ab}, Ji-Lung Hsieh^{c*}

Abstract

The study investigated publishing behaviors of high productivity authors who have ever published papers in biomedical open access journals (OAJ). In this study, 2,927 academic papers published by 30 high productivity authors were collected from Web of Science (WOS) database. The results of this study showed that: 1) the categories of the academic journals and in which the number of the 30 productivity authors' papers are displaying power law distribution; 2) the percentage of the 2,927 papers in OAJ is 36% and is increasing year by year; 3) the correlation between journal impact factor and the number of the papers is modestly positive correlated; 4) with regard to the number of paper citation, the correlation between the mean journal impact factor and the citation of the papers is highly positive correlated; it's notable that, in this study, to be compared with non-OAJ, OAJ has no citation advantage to these high productivity authors, and this result differs from the predecessors' researches.

Keywords: Informetrics; Open Access Journal; High productivity author; Citation advantage

SUMMARY

With the high and annually increasing price of electronic academic journals, and the sales approach of large-bundle sets, university libraries have faced what Baht (2009) called "serials crisis", which not only affected libraries' collection development, but also indirectly caused the cut of readers' services. Both of the situations would interfere with academic communications (Bosch, Henderson, & Klusendorf, 2011). This problem has brought out the concept of Open Access (OA), which was proposed in 2001, along with the so-called "BBB definition (Suber, 2004). It is hoped that Open Access will become a new paradigm of academic publishing. Since journal authors are a key factor in academic communication systems, the Open Access Directory has made authors' attitudes and actions one of the important research topics.

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Most of previous studies on authors publishing articles in open-access journals adopted surveys or interviews to investigate authors' submission experiences or their acceptance of open-access journals. Few studies focused on quantitative analysis of objective data of authors' published articles. Thus, this study aimed to investigate high-productivity authors in open-access journals, and to conduct a quantitative analysis of their published articles.

Based on literature review, it was claimed that the experience of submitting articles to open-access journals might change authors' conceptions and attitudes toward open-access journals. Therefore, this study would focus on high-productivity authors in open-access journals. The goals of this study were: 1) to investigate the situations of high-productivity authors in open-access journals; 2) to investigate the number distribution of these authors' articles in open-access and non-open-access journals, as well as the citation numbers, that is, the frequency of being cited. For achieving the research goals mentioned above, the research questions would be: 1) what is the percentage and distribution of these high-productivity authors' articles in open-access journals? 2) compared with articles published in non-open-access journals, have their articles published in open-access journals been cited more frequently? 3) for the same author, do articles published in open-access journals have a greater citation advantage than those published in non-open-access journals?

This study adopts informetric analysis to investigate articles of high-productivity authors in open-access journals in bio-medical field, with a focus on the sub-field of Biotechnology and Applied Microbiology, which is with a larger number of open-access journals in Journal Citation Reports (JCR). Thus, the research results could only be significant when discussed in Biotechnology and Applied Microbiology sub-field, and could not be viewed as generalized inferences in the whole biomedical field.

In this study, 2,927 academic articles published during 1992-2012 period by 30 high-productivity authors were sampled from Web of Science (WOS) database. After downloading bibliographic data from WOS database, the researchers looked up in the *Directory of Open Access Journals (DOAJ)* to distinguish open-access journals from the others, and confirmed by checking those journal websites.

The results of a quantitative analysis on the quantity distribution of these 2,927 published articles showed a power law distribution. The percentage of articles published in open access journals was 36%, with an increasing trend year by year. Because the quantity of these articles showed a power law distribution, a further quantity analysis was conducted on the top ten journals with the highest numbers of published articles. The results showed that 1,228 articles were published in these top ten journals, with a percentage of 42%, including 712

articles in five open access journals and 516 articles in five non-open-access journals. All of these ten journals were collected in Journal Citation Reports, with rankings in the top 16%, and could be viewed as the top journals in the field.

In terms of the quantity of published articles of each author, the range of the numbers of articles collected by Web of Science was from 29 to 318, and the range of the numbers of articles published in open access journals was from 16 (19%) to 104 (84%). In terms of the rankings of open access and non-open-access journals in the field, for articles of 24 authors, the average ranking of open access journals (ranked in the top 28%) was higher than the one of non-open-access journals (with rankings loosely falling between 3% and 81%). The regression analysis showed there was a non-significant but positive correlation between the Impact Factor (IF) of journals and the numbers of published articles.

As to citation advantage, unlike previous studies, the results of this study showed that there was a significant positive correlation between the citation numbers and the average IF value of journals, while open access journals did not have citation advantage for these 30 high-productivity authors. The average citation number of published articles by the 30 high-productivity authors was 0.93 time a year, with the average of open access journals 0.88 time and non-open-access journals 0.99 time. The average citation advantage of these authors' articles in open-access journals was -52%. The contradicting findings of this study might be resulted from the differences of subject fields and research participants.

From the fact that 36% of these 30 authors' articles were published in open-access journals which were ranked in the top 28%, it was safe to say that as long as having good performance and reputation, no matter being open access journals or not they would still get support from scholars. Although the open access journals in this study did not have a higher IF value than those non-open-access ones, their rankings in the field were still satisfying. Authors who published in open-access journals were not limited to one particular group, but were consisted of various scholars in academic communication field, who published a number of articles in top journals. From this fact, we could see that there is still a promising future for the development of open access journals.

This study is more objective to use purposive sampling of high productivity authors than using conventional extensive sampling. In addition, this study adopting informetric analysis to compare objective data would produce more reliable findings for supporting the promotion and development of open-access journals. And the last, compared to previous findings, the results of this study revealed that not only there were differences among the academic communication modes of different subject fields, but also within the same field, those high-

productivity authors had different publishing modes from other scholars, such as the differences of citation advantage. Thus, by identifying participants' unique characteristics, it helps to understand the needs and academic communication modes of scholars in various academic fields, for providing better services that meet scholars' needs.

ROMANIZED & TRANSLATED REFERENCE FOR ORIGINAL TEXT

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JoEMLS English Summary



An Analysis of Literature Searching Anxiety in Evidence-Based Medicine Education

Hui-Chin Chang^{ab}, Chih-Lung Wu^{cd}, Pei-Chun Chao^{ef}
Long-Yau Lin^{gh}, You-Tsz Yuⁱ, Shan-Ju L.Chang^{j*}

Abstract:

Introduction: Evidence-Based Medicine (EBM) is hurtling towards a cornerstone in lifelong learning for healthcare personnel worldwide. This study aims to evaluate the literature searching anxiety in graduate students in practicing EBM.

Method: The study participants were 48 graduate students who enrolled the EBM course at a Medical University in central Taiwan. Student's t-test, Pearson correlation and multivariate regression, interviewing are used to evaluate the students' literature searching anxiety of EBM course. The questionnaire is Literature Searching Anxiety Rating Scale, LSARS.

Results: The sources of anxiety are uncertainty of database selection, literatures evaluation and selection, technical assistance request, computer programs use, English and EBM education programs were disclosed. The class performance is negatively related to LSARS score, however, the correlation is statistically insignificant with the adjustment of gender, degree program, age category and experience of publication.

Conclusion: This study helps in understanding the causes and the extent of anxiety in order to work on a better teaching program planning to improve user's searching skills and the capability of utilization the information; At the same time, provide friendly-user facilities of evidence searching. In short, we need to upgrade the learner's searching skills and reduce the anxiety. We also need to stress on the auxiliary teaching program for those with the prevalent and profound anxiety during literature searching.

Keywords: Evidence-based medicine; Literature searching anxiety

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SUMMARY

Introduction

Evidence-Based Medicine (EBM) is hurtling towards a cornerstone in lifelong learning for healthcare personnel worldwide. This study aims to evaluate the related anxiety graduate students experience when searching for relevant literature in practicing EBM.

Evidence-based medicine (EBM) is “the conscientious, explicit, and judicious use of the best current evidence in making decisions about the care of individual patients. “EBM” is an important tool for lifelong learning in medicine and postgraduate medical students need to develop the skills in searching for relevant literature to cope with the class demands especially in clinical seminars required for medical students. However, major hurdle in EBM learning for searching and critically appraising evidence for the medical literature causes anxiety. Thus, understanding what is anxiety and where it comes from is of great importance.

There is no universal approach to EBM education. The curriculum has been evolved to be simple and practical in order to reduce postgraduate medical students’ anxiety in learning EBM. Postgraduate courses required students to learn an excessive quantity of information, and we evaluated the related anxiety using students’ self-reported assessments of their anxiety and interviewed the most anxious students to figure out the source of anxiety and proposed the amelioration method in this study. The contribution of our methods and results of the evaluation may be useful for other medical schools developing an EBM curriculum, especially schools in developing countries where resources are limited.

Methods

Study setting

The subjects in the first stage, a quantities study, are sampled from a medical university who attend postgraduate degree programs in central Taiwan. Convenience sampling was used to select first-year students from the class of “clinical seminar” in 2005, including 21 students in the master program and 27 in the doctoral program, with results of 48 effective subjects. Questionnaires for Library Anxiety Scale, Statistical Anxiety Rating Scale, Composition Anxiety Rating Scale and Literature Searching Anxiety Rating Scale were distributed to the subjects.

In the second stage, which is a qualitative research, subjects were selected from those students whose level of anxiety scores exceed mean plus 1 standard

deviation in the first stage study. This article focuses on the results of literature searching anxiety only.

Questionnaire

The faculty members collaboratively developed the Literature Searching Anxiety Rating Scale (LSARS) and used the tool to assess the anxiety status of participants in evidence searching. The LSARS has been validated by EBM faculty members and test-retest method was used to ensure its reliability. Class performance was evaluated by class test and assessed by the faculty members.

Statistical methods

Correlation, student's t-test, multivariate regression were used for analysis by SPSS Version 14.0 software.

Results

1. Basic characteristic:

Among the 48 valid subjects, male students (N=37, 77.1%) were the dominant gender; doctoral students (N=27, 56.2%) were slightly more than the master's students; the mean age of the subjects is 39.3 ± 7.5 , thus the researchers set the age of 40 as the cutting point for the purpose of analysis. The majority of the subjects is below the age of 40 (N=30, 62.6%); 35 students (72.9%) had experience in publishing research paper; all students have personal computers (N=48, 100%); the nationality of the majority of the students (N=47, 98%) is Taiwan.

2. Descriptive analysis of literature searching anxiety:

The results showed that the means of individual variables of LSARS were within 2.0-3.4. Comparing with the median, eight variables from the scale indicating the subjects had high level of partial anxiety.

3. The basic characteristics of the analysis of variance for literature searching anxiety and class performance based on demographics:

(1) There is no significant difference in anxiety level related to basic demographics.

(2) There is significant difference for class performance on article comprehension and analysis. The ability to make conclusions was related to subjects' degree programs ($F=0.003$, $p<0.001$), age ($F=0.077$, $p<0.01$), and experience of academic publishing ($F=0.186$, $p<0.001$).

4. Correlation analysis between literature searching anxiety and class performance:

Pearson product-moment correlation coefficient with two-tailed analysis ($\alpha < 0.05$) was used to examine the relationships for 4 variables from literature searching anxiety and class performance, which includes Topic 1: Strategies

on literature searching; Topic 2: Reading assessment of EBM; Topic 3: Grades on integration and presentation; Topic 4: Overall performance. The results of relative analysis indicate that the performance of Topic 1, Topic 2, and the overall performance compared to literature searching anxiety had significant negative correlation on anxiety score.

5. Prediction of class performance by literature searching anxiety and variables of basic characteristics:

Level of literature searching anxiety, gender, degree program, age, and experience of academic publishing had explanation power of 64.6% influence to class overall performance of article comprehension and analysis. The results of model test indicated regression effect was statistically significant ($F(5.42) = 15.341, p = 0.000$).

By further examining independent variables, the results of coefficient estimate indicated the more of literature searching anxiety, the lower the overall class performance; on the other hand, the level of literature searching anxiety was statistically insignificant in multivariate regression analysis. Even for the variable of controlled characteristics, in general, class performance was not very good; however, degree program showed better discriminant explanation power, followed by the experience of academic publishing and age, which indicated less influence on the level of literature searching anxiety.

6. Findings of the qualitative study:

(1) Students' views toward EBM

The following results showed the students' perceptions for EBM courses:

(i) Acknowledging the importance of EBM

All interviewees were working students and their jobs were all clinical medical associated, and therefore all of them agreed that EBM training is essential.

(ii) Participation of related courses

Most interviewees expressed past experience of EBM participation. Most of them only took limited amount of relevant training lessons, career education, and conference sessions, but they undoubtedly agreed on the importance of EBM training.

(2) Problems confronted with EBM education

The followings revealed the results for sources of pressure, lack of confidence, and troubles encountered in EBM courses.

(i) Sources of pressure

Sources of pressure came from (a) literature screening and searching, (b) clinical work, (c) limited English skill, and (d) time management.

(ii) Reasons of lacking confidence

Students were lack of confidence in EBM literature searching due to (a) infrequent search of literature, (b) course design, and (c) methods of information retrieval.

(iii) Difficulties encountered

Difficulties encountered when searching for literature were (a) accessing the Internet, (b) methods of searching, (c) screening of literature, (d) limited English skills, and (e) accessibility of full text articles.

(iv) Source of anxiety

Interviewees expressed that literature searching and screening were the most noticeable source of anxiety.

(3) Methods of coping with difficulties

The coping strategies expressed by most students included (a) seeking assistance from experienced researchers, (b) acquiring opinions from colleagues and instructors, (c) asking help from librarians, and (d) taking other related course.

(4) Students' reflections on needs and future suggestions

Four aspects were identified based on students' reflections on the needed abilities: (a) management of bibliography, (b) literature searching, (c) English skills, and (d) applications of clinical skills.

Suggestions to EBM courses are: (a) better connections with clinical medicine applications, (b) strengthening the purpose and spirit of EBM, (c) smaller class size with in-class practices on computers, (d) modifications of the course, (e) making library instructions as a required course, and (f) inviting librarians to teach in class.

7. Comparisons of quantitative and qualitative results:

According to the findings, students had more anxiety in problems related to methods of literature searching, selections of database, screening of relevant literature, and seeking assistance. The results of interview analysis showed that there were persisting problems in literature searching, accessing full text articles, English skills, infrequent use of database, and course design.

Contrasting the results from the quantitative and qualitative study, more anxiety problems were found in qualitative interviews than the quantitative study. The differences found in the two research methods may be related to difficulties on understanding of scale items. For future study, researchers could use the results of the qualitative study to improve the design of LSARS so as to further understand the cause of anxiety.

Discussion

1. Anxiety on literature searching and EBM education:

The results of the quantitative study revealed that students showed anxiety

when taking EMB course. Especially, there was major anxiety on literature searching and students' perception of lacking confidence.

As the quantitative results showed, students indicated anxiety problems in the following four areas: (1) searching methods, (2) database selection, (3) literature screening, and (4) seeking for assistance. The qualitative study also revealed problems like the use of computer programs, accessibility for full text articles, English skills, frequency of database use, and the design of EBM course, which is similar to the results of Walker, Mckibbon, Haynes, and Ramsden (1991). Researchers from McMaster Medical Center also pointed out difficulties of uncertainty of database design algorithm, unfamiliarity of searching strategy, inadequate use of Boolean algebra, title, subtitle and advance searching functions.

Since many scholarly articles are published in English, non-English readers would find it difficult reading the literature. We found that poor English reading ability can cause poor comprehension, which is similar to the findings of Oranta, Routasalo, and Hupli (2002), indicating that research in nursing are mostly written in English and it did cause barrier for literature searching and evaluating.

2.Literature searching anxiety and class performance on article comprehension:

The results of correlation analysis showed that there is a relationship between anxiety of literature searching and overall class performance. The higher the anxiety level during literature searching, the worse the performance in overall class in Topic 1 and Topic2. After multivariate regression analysis, the adjusted result showed no significant correlation between overall performances with the anxiety level and minor relationship in variables of class, age, experience in publication, and overall performance on article comprehension.

The results indicated that: (1) Anxiety persistently exists for students undertaking EBM, but as age matured, students in PhD and Master degree program might be more sure of their future and career path, thus have better control over the anxiety problems. Therefore, their anxiety was not dominant after all based on the analysis of demographics. (2) Class performance on article comprehension could not be predicted from anxiety scores. (3) Possible anxiety may appear in other learning scenarios, which is not related to the overall performance in this study.

3.Quantitative study:

Based on the results, all interviewees admitted that EBM was important and crucial for career of clinical medicine. Similar results were also found in Young and Wards (2001) and McColl, Smith, White, & Field (1998).

Findings from both qualitative and quantitative methods found that the gap in performance among students were not the result of their anxiety. Instead, individual students would apply their personal methods to alleviate pressure and anxiety.

Conclusion and Suggestion

The aim of this study is to investigate possible causes of anxiety from literature searching and evaluate the relationship between anxiety and learning performance of graduate students of medical university in central Taiwan. The **conclusions** of both of the quantitative and qualitative investigations are as below:

1. Participants of this study indicate EBM education can trigger pressure, anxiety, and lack of confidence.
2. Significant differences are found for demographics on literature searching anxiety.
3. Class performance on article comprehension shows differences in some of subjects.
4. Negative correlation is found between literature searching anxiety and class performance.
5. Literature searching anxiety cannot clearly predict class performance on article comprehension.
6. Students affirm EBM education is critical.
7. Self-training on skill enhancement is necessary.
8. Students would seek assistance when encountering problems.

Suggestions:

1. Further investigations on correlation of learning performance and student anxiety are encouraged.
2. Providing more pleasant atmosphere for education may benefit on lowering the level of students' anxiety.
3. Instructors should understand students' needs and conditions of learning as a reference for future course revision and development.
4. Instructors should provide course revision and evaluation.
5. Librarians should actively participate in EBM courses.

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JoEMLS English Summary

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Elementary Students' Reading Behaviors of E-Books with Different Adaptive Designs

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Abstract

This study aimed to explore the impact of age and adaptive design on elementary students' reading of e-books. This study was a two-way experimental design where the first factor was learner age (4th and 5th grade) and the second factor was e-book adaptive design (adaptive, non-adaptive visual, non-adaptive verbal). The e-books used in this study targeted six major classes of nutrients as content. This study was guided by the following question: Is there any interaction between age and e-book adaptive design on learning achievement (recall and transfer) and learning motivation (attention, relevance and confidence)? A sample of one hundred 4th and 5th graders participated in the study, and participants were randomly assigned into one of three groups. They were asked to do a pre-test first, and then they read their assigned e-books for twenty minutes. After they finished reading, they were given a post-test. The results showed significant interactions between age and the e-book adaptive design. For the 4th graders, the adaptive e-book group worked best in recall, transfer and attention scores. For the 5th graders, there was no significant difference among these three e-book designs. This revealed that the adaptive design is more critical for younger children. This study hoped to broaden theories on multimedia learning for young learners and serve as a reference for elementary school teachers and e-book designers.

Keywords: E-book; Adaptive design; Elementary education; Human-computer interface

SUMMARY

Introduction

With the progress of technology, instructional multimedia allows the equipment of **adaptive** mechanism and creates learner-controlled options to support the user's learning preferences (Wolf, 2002). This adaptive environment is built around a central learner model, which stores information about the learner. It usually contains personal information about the learner information to improve human-computer interactions and performance-related information such as test history, current work and future objectives (Wolf, 2002). The main goal of

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adaptive multimedia is to match instructional material to learner preference for better learning effectiveness.

This study was conducted to broaden the understanding of the design of adaptive multimedia. This study selected one unit from an elementary children's health education textbook, **Six Major Classes of Nutrients**, and reorganized the content into an e-book. This study chose e-book as the form for content delivery because e-books have become increasingly popular across a range of subject areas and education levels. Studies show that the multimedia features in e-books help children improve their reading comprehension skills. This study aims to compare learning performance using e-books with different adaptive approaches (non-adaptive: verbal, non-adaptive: visual, and adaptive) in health education for 4th and 5th graders, and to consider how children's ages influenced on e-book reading behaviors. This research question is: Is there any interaction between age and e-book adaptive design on learning achievement and learning motivation?

Before diving into the experimental design for researching these questions, a brief background is presented in the following section.

Literature Review

Adaptive educational media refers to instructional media with learner-controlled options to support the user's learning preferences (Wolf, 2002). The term "learning preferences" here refers to people's information-processing habits, and it reflects stable attitudes, dominant or preferred modes of perceiving, remembering, thinking, and problem-solving (Green & Schroeder, 1990; Messick, 1994). An important category of learning preferences is the distinction between visualizers and verbalizers. This concept is based on Pavio and Baddeley's model which argues people's information processing was through two separated channels: verbal/phonological and visual/spatial channels dealing with words and pictures respectively (Pavio, 1971; Baddeley, 1986). People who prefer to process information via the verbal channel are called verbalizers. They learn best from words (speech or written text). People who prefer to process information via the visual channel are called visualizers. They learn best from pictures, demonstrations, and displays. Massa and Mayer (2006) found some supporting evidence in a multimedia learning environment regarding electronics for the verbalizer-visualizer hypothesis: **students who preferred visual modes of presentation tended to select pictorial help screens whereas students who preferred verbal models of presentation tended to select verbal help screens.**

The visualizer-verbalizer hypothesis was the basis of many adaptive educational media, and it worked for most systems where adult learners were the main participants. However, the visualizer-verbalizer hypothesis has some

controversial issues. First, though this hypothesis shows the learners' tendency of help-seeking in a multimedia environment, it is unclear if the learning performance will be enhanced if content is delivered in the learners' preferred style (Brusilovsky, 2001; Wolf, 2002; Gilbert & Han, 1999). In addition, whether the childhood learning is best characterized by this hypothesis is arguable. Children, restricted by an underdeveloped cognitive system, may not have the same reactions to adaptive multimedia as adults do. Due to children's cognitive limitations, their responses to adaptive educational media will be different from that of older learners or adults. We need more concrete evidence to understand whether children depend more on the adaptive mechanism or less, as compared with older learners or adults. It is necessary to understand the relationship among young learners' cognitive development status, learning preference and their impact on learning for better design of adaptive multimedia in the future.

Method

This research aimed to understand how learner age and e-book adaptive design influence learning outcomes. The first independent variable was age in two levels: 1) 4th grade, and 2) 5th grade. The second independent variable was e-book adaptive design in three levels: 1) non-adaptive e-book: verbal, 2) non-adaptive e-book: visual, and 3) adaptive e-book: verbal or visual based on children's preference. The dependent variables include: 1) learning achievement (recall and transfer), and 2) learning motivation (attention, relevance, and confidence). The research questions in this study were: 1) Is there any interaction between learner age and e-book adaptive design in children's learning achievement (recall and transfer)? 2) Is there any interaction between learner age and e-book adaptive design in children's learning motivation (attention, confidence, and relevance)?

The data collection was conducted in the 2012 fall semester. Participants were recruited from one elementary school in southern Taiwan, from five different classes and students were randomly assigned to one of the three treatment groups. There were one-hundred valid participants in this study. Fifty-two were 4th graders and forty-eight were 5th graders. The paper-based pre-test was given two weeks before the experiment. During the experiment, students were randomly assigned to one of the three levels of the e-book program and were asked to read it individually. All students performed the experiment in a computer lab. Students were given twenty minutes to finish the reading task. After they finished reading, they were asked to do a paper-based post-test as well as the motivation survey. Data was analyzed using 2-way ANOVA.

Results and Discussion

The first research question was about the adaptive design on children's reading achievement of the e-book. The findings showed that the adaptive e-book worked better in enhancing recall and transfer scores for the 4th graders, but not for the 5th graders. It seemed that the adaptive e-book had a significant impact only on younger students' abilities recall and transfer. This result can be explained that younger children may not have fully developed the linking of these channels together and may only get used to learning with one certain type of channel. If instructors force children to process information by one limited channel, the learning achievement might decrease. It would be better to assign children who are well-developed in channel integration to a combined version of e-book, and to assign children who are not well-developed to a verbal version of the e-book to reduce the cognitive load. This might be why the adaptive e-book worked better for the 4th graders.

The results can also be explained from the developmental psychological dimension. The mean age of the 4th graders was 10.5 years old, in the concrete operational stage in Piaget's theory, a stage at in which children tend to think very concretely and specifically. Children may not have developed good reasoning and problem-solving abilities in this stage, and may have difficulties in information linking and causation while reading e-books with diverse sources of multimedia. Once learners were provided with some material far from matching their capacities and preferences, they might not have been able to go through it. The mean age for the 5th graders was 11.5 years old, which was approaching the formal operational stage (adolescence and into adulthood). Children's cognitive development at this stage is becoming stable and the individual difference may get smaller compared with the 4th graders. The presentation format of material might not be that critical because learners at this stage have some capability to do hypothetical reasoning and problem-solving. The children had more cognitive ability to integrate information from different presentation formats even though the presentation style did not match their learning preferences.

The second research question was about with the effect of the adaptive design on children's learning motivation of the e-book. The findings showed that the adaptive e-book worked better in drawing attention from the 4th graders, but not for the 5th graders. This result is similar to the result in question 1. For the 4th graders, the adaptive e-book easily held younger learners' attention, perhaps because it provided a version that matched their learning preference. Learners in the other two groups might have been forced to read a book that did not matched their capacity and preference; consequently they lost the attention for reading the e-books thoroughly. The fact that the adaptive design did not impact 5th graders'

attention might be due to their stable ability in integrating information in different formats.

Conclusion

The results showed significant interactions between age and e-book adaptive design. For the 4th graders, the adaptive e-book group worked best in recall, transfer and attention. For the 5th graders, there was no significant difference among these three e-book designs. This study suggests that the adaptive design is much more critical for younger children.

Several limitations need to be acknowledged in the interpretation of these results. First of all, this research was conducted in a laboratory setting rather than in a real classroom situation; thus students may have had different motivations and may have exhibited different behaviors than those experienced during an actual class. Second, this research was restricted to the learning of six major classes of nutrients for elementary students. Students may have had different responses if this particular unit and content subject had been exchanged for another one. Due to these limitations, the generalization of this study might be conservative. Though limitations existed, this study aimed to contribute to more empirical studies and to share the experiences of developing an adaptive e-book for elementary learning and the attempts to explore the adaptive e-book affordances and constraints.

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JoEMLS English Summary



A Study on Emotional Healing Efficacy of Fiction for Undergraduate

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Abstract

In modern society, undergraduates may encounter multiple pressures and thus feel the sense of alienation, anxiety, disturbance and depression. For undergraduates, reading can be independently conducted without the intervention of an instructor; therefore, undergraduates who feel reluctant to expose private emotions to counselors can help themselves through the reading of emotional healing books. This is the application of bibliotherapy. Among various resources, fiction can serve as an appropriate emotional reading material. The researcher deployed semi-structured in-depth interview, and interviewed 21 undergraduates in Taipei City and Taipei County. This study is aimed to understand the kinds of fictions undergraduates read when they are upset and to analyze the emotional healing process of identification, catharsis, and insight so that the emotional healing efficacy can be evaluated. The findings showed that romance, realistic fiction, fantasy, martial arts novel, inspirational fiction, historical fiction, and science fiction can provide full process of emotional healing efficacy. However, detective fiction, online novel, psychological fiction, and horror fiction can only provide parts of the healing process. Besides, the healing efficacy of a specific fiction is different from reader to reader.

Keywords: Fiction; Emotional healing; Undergraduate; Developmental bibliotherapy

SUMMARY

Undergraduates nowadays may encounter stress from multiple facets of life, and would be inclined to have negative emotions such as isolation, anxiety, uneasiness or depression. Reading, with its nature of keeping personal privacy and self-dignity, could be used as a supportive material for helping undergraduates deal with emotional disturbance problems. People who ever soothed negative emotions through reading are actually employing the application of “developmental bibliotherapy”. In short, during the reading process, if readers could identify with characters in reading materials and project themselves in the problem-solving process along with characters, their negative emotions would be channeled away and uneasiness would be cleared off at the catharsis stage. In the end, based on

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the reading experience of a certain emotional healing work, readers would gain insights into appropriate attitudes, and then apply possible methods for solving daily-life problems. Through this whole process, the reading materials would have emotional healing efficacy on readers.

According to literature review, fiction is one of the popular emotional healing materials among undergraduates. To extend the understanding of fictions as emotional healing material, from October 2007 to February 2008 the researchers have conducted semi-structured in-depth interviews with 21 undergraduates whose age was between 18 to 24 years old. In other words, this study is aimed to conceptualize the fiction genres undergraduates read when encountering emotional disturbance problems, and to explore undergraduates' emotional healing experiences in terms of the psychological process of identification, catharsis and insights during the reading.

1. Fiction genres of emotional healing materials read by undergraduate participants

In this study, undergraduate participants have mentioned eleven fiction genres, which were romance, realistic fiction, fantasy, detective fiction, martial arts novel, inspirational fiction, online novel, historical fiction, science fiction, psychological fiction and horror fiction.

2. Romance, realistic fiction, fantasy, martial arts novel, inspirational fiction, historical fiction and science fiction have had emotional healing efficacy on the participants.

Some participants read romance when encountering emotional disturbance problems which involved issues of academic study, interpersonal relations, family, intimacy and self-identity. The participants chose to read romances in which the main characters had similar personal traits as the readers themselves. These undergraduates released negative emotions when reading about happy and sound endings, and realized that they could rather adopt gentle and mild strategies to deal with their personal issues. Some other participants read realistic fiction when they encountered problems raised by academic study, interpersonal relations, family, intimacy or self-identity issue. The participants identified with the helplessness of characters, and released negative emotions through the characters' interaction with their families. Also, the participants realized they should take a positive attitude toward lives and open their hearts to family members.

Some participants read fantasy when encountering problems involving academic study, interpersonal relations, family and self-identity. When participants read the description of characters' helplessness and distress, they would see the figures as reflections of their own, and were deeply moved by the dialogues in fictions. The plots of fantasy could also help participants realize that

they should have confidence in themselves and seize chances. Some participants would read martial arts novels to relieve negative emotions triggered by issues of academic study and interpersonal relations problems. For instance, one participant who had problem balancing his focus on learning and personal hobbies identified with the main character's hesitation and suffering, and realized that one could take hobbies as refreshments.

In addition to the findings mentioned above, some participants read inspirational fictions to cheer themselves up when encountering problems of interpersonal relations and self-identity. For example, one participant regarded himself similar to the main character who lacked self-confidence and looked eagerly for social identity; as the main character standing up to adversities, the participant cleared off his fears and worries and cheered himself up to take a positive attitude. On the other hand, some participants read historical fictions when encountering intimacy problems. For instance, one participant thought himself sharing similar personal traits with the main character of a historical fiction. The participant saw the figure as a negative model and thus reminded himself not to shun away from responsibilities as the main character has done. Meanwhile, some participants read science fictions when encountering problems involving academic study, interpersonal relations and self-identity issues. One participant who had a feeling of uncertainty toward life mentioned that she identified with the helplessness of the main character, and released her negative emotions during the reading. The participant further encouraged herself to make a good career plan for her own life.

3. Detective fiction, online novel, psychological fiction, and horror fiction have partial psychological process of identification, catharsis, or insights

In this study, although detective fictions, online novels, psychological fictions and horror fictions were mentioned by undergraduate participants, a further investigation about the psychological process revealed that the participants may not find similarities for them to identify with in works of those genres, or lack of the process of catharsis to relieve negative emotions. In some cases, the participants did not gain insights after reading. Therefore, the fiction genres mentioned above could have partial emotional healing efficacy on undergraduate participants.

4. Emotional healing efficacy differed from person to person

Because of differences among life experiences, personal characteristics, preferences, and perceptions, emotional healing efficacy of fictions would differ from person to person. Participants may make distinct selections about fiction genres even if they encountered similar emotional disturbance problems.

Besides, participants would have different opinions toward fiction genres. For example, although romance was proved to have emotional healing efficacy and mentioned by many undergraduate participants, some participants thought the plots of romance were so unrealistic that readers may feel reluctant to identify with. Also, some of the problem-solving methods adopted by the characters may be inappropriate for undergraduates to apply in real life. In other cases, some participants mentioned that realistic fictions which represented life with excessive details may impair the catharsis process, for the plots would make them feel even more frustrated and upset.

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