



PNU University

English in Knowledge and Information Science (3)

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امروزه کتاب‌خوانی و علم‌آموزی، نه تنها یک وظیفه‌ی ملی، که یک واجب دینی است.

مقام معظم رهبری

در عصر حاضر یکی از شاخصه‌های ارزیابی رشد، توسعه و پیشرفت فرهنگی هر کشوری میزان تولید کتاب، مطالعه و کتاب‌خوانی مردم آن مرز و بوم است. ایران اسلامی نیز از دیرباز تاکنون با داشتن تمدنی چندهزارساله و مراکز متعدد علمی، فرهنگی، کتابخانه‌های معتبر، علما و دانشمندان بزرگ با آثار ارزشمند تاریخی، سرآمد دولت‌ها و ملت‌های دیگر بوده و در عرصه‌ی فرهنگ و تمدن جهانی به‌سان خورشیدی تابناک همچنان می‌درخشد و با فرزندان نیک‌نهاد خویش هنرنمایی می‌کند. چه کسی است که در دنیا با دانشمندان فرزانه و نام‌آور ایرانی همچون ابوعلی سینا، ابوریحان بیرونی، فارابی، خوارزمی و ... همچنین شاعران برجسته‌ای نظیر فردوسی، سعدی، مولوی، حافظ و ... آشنا نباشد و در مقابل عظمت آنها سر تعظیم فرود نیاورد. تمامی این افتخارات ارزشمند، برگرفته از میزان عشق و علاقه فراوان ملت ما به فراگیری علم و دانش از طریق خواندن و مطالعه منابع و کتاب‌های گوناگون است. به شکرانه‌ی الهی، تاریخ و گذشته ما، همیشه درخشان و پربار است. ولی اکنون در این زمینه در چه جایگاهی قرار داریم؟ آمار و ارقام ارائه‌شده از سوی مجامع و سازمان‌های فرهنگی در مورد سرانه‌ی مطالعه‌ی هر ایرانی، برایمان چندان امیدوارکننده نمی‌باشد و رهبر معظم انقلاب اسلامی نیز از این وضعیت بارها اظهار گله و ناخشنودی نموده‌اند.

کتاب، دروازه‌ای به سوی گستره‌ی دانش و معرفت است و کتاب خوب، یکی از بهترین ابزارهای کمال بشری است. همه‌ی دستاوردهای بشر در سراسر عمر جهان تا آنجا که قابل کتابت بوده است، در میان دست‌نوشته‌هایی است که انسان‌ها پدید آورده و می‌آورند. در این مجموعه‌ی بی‌نظیر، تعالیم الهی، درس‌های پیامبران به بشر، و همچنین علوم مختلفی است که سعادت بشر بدون آگاهی از آنها امکان‌پذیر نیست. کسی که با دنیای زیبا و زندگی‌بخش کتاب ارتباط ندارد بی‌شک از مهم‌ترین دستاوردهای انسانی و نیز از بیشترین معارف الهی و بشری محروم است. با این دیدگاه، به‌روشنی می‌توان ارزش و مفهوم رمزی عمیق در این حقیقت تاریخی را دریافت که اولین خطاب خداوند متعال به پیامبر گرامی اسلام (ص) این است که «بخوان!» و در اولین

سوره‌ای که بر آن فرستاده‌ی عظیم‌الشان خداوند، فرود آمده، نام «قلم» به تجلیل یاد شده‌است: «إِقْرَأْ وَرَبُّكَ الْأَكْرَمُ. الَّذِي عَلَّمَ بِالْقَلَمِ» در اهمیت عنصر کتاب برای تکامل جامعه‌ی انسانی، همین بس که تمامی ادیان آسمانی و رجال بزرگ تاریخ بشری، از طریق کتاب جاودانه مانده‌اند.

دانشگاه پیام‌نور با گستره‌ی جغرافیایی ایران‌شمول خود با هدف آموزش برای همه، همه‌جا و همه‌وقت، به‌عنوان دانشگاهی کتاب‌محور در نظام آموزش عالی کشورمان، افتخار دارد جایگاه اندیشه‌سازی و خردورزی بخش عظیمی از جوانان جویای علم این مرز و بوم باشد. تلاش فراوانی در ایام طولانی فعالیت این دانشگاه انجام پذیرفته تا با بهره‌گیری از تجربه‌های گرانقدر استادان و صاحب‌نظران برجسته کشورمان، کتاب‌ها و منابع آموزشی درسی شاخص و خودآموز تولید شود. در آینده هم، این مهم با هدف ارتقای سطح علمی، روزآمدی و توجه بیشتر به نیازهای مخاطبان دانشگاه پیام‌نور با جدیت ادامه خواهد داشت. به‌طور قطع استفاده از نظرات استادان، صاحب‌نظران و دانشجویان محترم، ما را در انجام این وظیفه‌ی مهم و خطیر یاری‌رسان خواهد بود. پیشاپیش از تمامی عزیزانی که با نقد، تصحیح و پیشنهادهای خود ما را در انجام این وظیفه‌ی خطیر یاری می‌رسانند، سپاسگزاری می‌نماییم. لازم است از تمامی اندیشمندانی که تاکنون دانشگاه پیام‌نور را منزلگاه اندیشه‌سازی خود دانسته و ما را در تولید کتاب و محتوای آموزشی درسی یاری نموده‌اند، صمیمانه قدردانی گردد. موفقیت و بهروزی تمامی دانشجویان و دانش‌پژوهان عزیز آرزوی همیشگی ما است.

دانشگاه پیام‌نور

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Preface

This book is designed on the basis of the demands of the Knowledge and Information Science students for reading English textbooks in their field of study. The reading selections acquaint students with a variety of topics related to Knowledge and Information Science. The purpose of the book is to increase students' reading comprehension ability by improving their vocabulary, and by the skills involved in using context clues.

It is assumed that readers of this textbook study independently; hence, the general aims and behavioral objectives of each unit are specified. Moreover, the comprehensive answer keys of the book give answers in a concise, organized manner. The book also contains a glossary in which the important words used in the book with their Persian equivalents are given.

Study Guide

The objective of this book is to increase your reading skills in the field of Knowledge and Information Science, and to help you become more independent readers. The book is divided to seven units, each unit comprising the following parts:

Word Definitions and Exemplifications

This part includes the definitions and exemplifications of the words that are assumed to be necessary to review before reading the main passage of each unit. The two exercises provided in the section will help you learn the meaning of the words and use them in sentences on various topics related to Knowledge and Information Science.

Reading Passage

The reading passages of the units of the book have been taken from English essays (in journals, books and encyclopedias) on a variety of topics related to the field. The main purpose of this part is to familiarize the student with typical authentic reading selections; to increase his/her reading ability; and to help him/her perceive facts, ideas, arguments, etc. found in each passage. The exercises provided in this section will help you get a better view of the topics related to Knowledge and Information Science.

Translation Exercises

There is an ever-increasing demand for the student to become acquainted with the translation skills. The final part of all the units

includes two exercises related to translation skills. Firstly, there is a short passage which should be translated into Persian. The student is required to read the whole passage carefully and translate it into fluent Persian. The translation must be technically correct, and the influence of English language should not be detected in the choice or order of words. Finally, several technical words and phrases are selected to be provided by their Persian equivalents.

The Answer Keys

Since the book is designed for independent study, the students can find the answers to all the questions of the various parts of each unit in the Answer Keys.

Glossary

Some technical words and their Persian equivalents are alphabetically arranged in the section.

Unit 1

Metric Studies: From Bibliometrics To Webometrics

General Aims

This unit is designed to help you learn a number of new general and technical words, to promote your technical reading comprehension, and to familiarize you with the concepts involved in metric studies.

Behavioral Objectives

After carefully reading this unit, you are expected to:

1. Understand the concepts related to metric studies and their variations.
2. Define the meaning of the words presented at the beginning of the unit, and do Exercises 1.1.1 and 1.1.2.
3. Read the passage about metric studies, and do Comprehension Exercises 1.2.1 to 1.2.3.
4. Do Translation Exercises 1.3.1 and 1.3.2.

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Word Definitions and Exemplifications

ambition

n.

strong desire for success, power, wealth, etc

A good librarian must be completely free of any negative emotions, e.g. **ambition**, which may have destructive effects on the efficiency of library services in his/ her workplace.

catalytic

adj.

when we describe a person or thing as having a catalytic effect, we mean that they cause things to happen or they increase the speed at which things happen.

The results of studying information seeking behaviors show that the principle of "least effort" has a **catalytic** effect on user's tendency to informal information resources.

collaborate

v.

work together, esp. in a joint intellectual effort

In the library I work in, some of its cultural members **collaborate** to celebrate a poem reading circle every week.

contribution

n.

share; effect

Interlibrary loan will not be operated efficiently, unless all libraries involved show sincerely **contribution** towards accomplishing its goals.

exponential **adj.**
increasing

The **exponential** growth of information resources has resulted in emerging a new term in the field of KIS (Knowledge and Information Science): information overload.

gauge **n.**
a standard or scale of measurement

International Federation of Library Associations (IFLA) has published some guidelines which act as a **gauge** of library operations.

multifaceted **adj.**
multidimensional; having many facets
or aspects

Literacy, nowadays, is so a **multifaceted** area that has been expended to the world of computer and internet as well.

output **n.**
production

The **output** of metric studies can be used for designing the scientific map of a country.

prominence **n.**
quality of being famous

The "Law of Scattering" came into **prominence** due to Bradford's efforts who thought of improving the status of collection development and decreasing the costs of ordering unnecessary journals.

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rank

v.

classify; sort

Metric studies pave the road for having a good measure to **rank** the prevailing scientific status in a society as a whole.

recognized

adj.

notable; famous; well known

Hirsch index is one of the most **recognized** indicators in bibliometric studies.

seminal

adj.

providing a basis or stimulus for further development

Tim Burners Lee, the creator of the World Wide Web, distributed the first **seminal** works and explained the thinking on this area.

trace back

v.

find sb or sth by following their/its track

The researcher **traced back** the websites visited by internet users to discover their information seeking habits.

1.1 Vocabulary Exercises

1.1.1 Match the words in Column A with their appropriate equivalents in Column B.

Column A	Column B
... 1. prominence	a) destructive
... 2. seminal	b) well known
... 3. exponential	c) positive
... 4. output	d) classify
... 5. gauge	e) production
... 6. rank	f) quality of being famous
... 7. ambition	g) increasing
... 8. recognized	h) a standard or scale of measurement
... 9. multifaceted	i) strong desire for success, power, wealth, etc
... 10. collaborate	j) multidimensional
... 11. contribution	k) work together
	l) effect
	m) tradition
	n) providing a basis for further development

1.1.2 Match the words in Column A with their best Persian equivalents in Column B.

Column A	Column B
... 1. exponential	a) کتاب‌سنجی
... 2. ambition	b) جاه‌طلبی
... 3. citation	c) تصاعدی
... 4. bibliometrics	d) علم‌سنجی
... 5. rank	e) رتبه‌بندی کردن
... 6. scientometrics	f) استناد

Reading passage

Metric Studies: From Bibliometrics To Webometrics

Introduction

Bibliometrics, as a tool to measure scientific research output, has seen major changes over the last five decades and has emerged as an established field of research in Knowledge and Information Science. It has arisen as a recognized scientific specialism, taught in universities as part of information science courses in Europe, America, and recently in Iran.

In 1906, James McKeen Cattell launched the biographical directory of American *Men of Science*, published every five years and the directory collected information on thousands of American scientists active in research. Cattell introduced two dimensions to the measurement of science, i.e. quality and quantity and these two dimensions still largely define the field of bibliometrics studies. Quantity or productivity as he called it, was simply the count of number of scientists a nation produces, while quality or performance was defined as contributions to the advancement of science and was measured by averaging peer rankings of colleagues. Although bibliometrics was used as a standard for measuring the publication output of scientists almost a century ago, it was largely the work of Eugene Garfield in the 1960s and his *Science Citation Index* through his newly developed Institute for Scientific Information (ISI), now part of Thomson Reuters, that made possible the quantitative analysis of scientific research.

1. Bibliometrics

Cattell, as pointed out above, is generally associated with the first systematic collection of statistics on science. He laid the foundation for others who introduced the systematic use of bibliometrics. Cattell used his biographical directory to study scientists and their activity in research in the United States and from the data, Cattell produced statistics on the number of scientists and their geographical distribution and ranked scientists according to their scientific performance. Cattell can thus also be credited for having launched scientometrics, or the systematic measurement of science.

Bibliometrics analysis predates the development of the *Science Citation Index (SCI)*, but the advent of SCI and specifically the availability of electronic access (online, CD-ROM and web- based) to the Institute for Scientific Information's (ISI) massive datasets has had a catalytic effect on the popularity, scope and ambition of bibliometrics research, both within and beyond the information community. SCI was created as a database of references made by authors to earlier publications which will lead the readers to other similar articles as well as encourage them to work on similar topics. The ISI also developed other databases such as the *Social Sciences Citation Index (SSCI)* and *Arts and Humanities Citation Index (AHCI)* and along with them new and varied statistics. These statistics include the number of citations to all articles in a journal or all articles by an author, research group, or country. Some are further developed into famous indicators with supporting theories and reasonably well accepted standard interpretations. The most well-known is the journal impact factor (JIF).

Modern bibliometrics as a research tool has been largely inspired by Derek de Solla Price and the seminal work carried out by him in the middle of the 20th century. In his book "Little Science- Big Science" published in 1963, he analyzed research communication and presented a number of quantitative evaluation techniques. He was the

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first to examine the growing trend of collaboration among chemistry researchers by using bibliometrics. Bibliometrics is used as a methodology in many other fields of science, mainly to map the publication pattern in different disciplines.

2. Scientometrics

It is a common misbelief that scientometrics is nothing else but the publication and citation-based gauge of scientific performance or compiling cleaned-up bibliographies on research domains extended by citation data.

Scientometrics is considered as the study of the quantitative aspects of science as a discipline or economic activity. It is part of the sociology of science and has an application for science policy-making. It involves quantitative studies of scientific activities, including among others, publication, and so overlaps bibliometrics to some extent. The term scientometrics came to prominence as the name of a journal founded by Tibor Braun in 1977, originally published in Hungary and now in Amsterdam. Main subjects of scientometrics are individual scientific documents, authors, scientific institutions, academic journals, and regional aspects of science. There is a rapid addition of scientometric data but not bibliometric data, such as data on human resources, infrastructural facilities, and funding. In Knowledge and Information Science-oriented scientometrics, in contrast to economy, sociology or psychology of science, some aspects of information and communication are examined. These aspects may include productivity (documents per year), subjects of the documents (words or co-words), reception (readers of the documents) and formal communication, references and citations, and co-citations.

Scientometrics is a multifaceted research strategy encompassing subareas such as structural, dynamic, evaluative and predictive scientometrics. Structural scientometrics comes up with results like the re-mapping of the epistemological structure of science based, for instance, on co-citation, bibliographic coupling or co-word techniques.

Dynamic scientometrics on the other hand constructs sophisticated models of scientific growth, obsolescence, citation processes, etc.

3. Informetrics

Informetrics is described as the study of the quantitative aspects of information in any form, not just records or bibliographies, and in any social group, not just scientists. Thus it looks at the quantitative aspects of informal or spoken communication, as well as recorded information. Furthermore, informetrics investigates the information needs and uses of the disadvantaged groups, not just the intellectual elite. The quantitative study of recorded discourse may relate to any medium, although until recent decades print media have dominated informetrics research. With the wider availability of documentary resources, the discourse electronic formats, particularly through machine-readable databases and more recently the internet, research on informetrics based on electronic data sets has become commonplace. It incorporates and utilizes many studies of measurements of information that lie outside the boundaries of both bibliometrics and scientometrics as such the term 'Informetrics' is used as the broad term comprising of all-metrics and studies related to Information science. Although the field of Informetrics can be traced back to the first half of the twentieth century through the works of Lotka (1926), Bradford (1934) and Zipf (1949), the term was popularized by Blackert and Siegel (1979) and Nacke (1979) in the late 1990s. The concept steadily gained popularity through international informetrics conferences.

One of the main factors that contributed to the rapid growth of the field of Informetrics over the last few decades is the advent and the exponential growth of the *Journal of the American Society for Information Science and Technology (JASIST)* which promulgated the publication of documents dealing with Informetrics. The growth of the journal indirectly encouraged the publication of papers, in terms of number of authors and even in terms of average number of references per paper.

4. Webometrics

Webometrics is the quantitative analysis of web-related phenomena, drawing upon informetric methods and typically addressing problems related to bibliometrics. Webometrics was triggered by the realization that the web is an enormous document depository with many of these documents being academic-related.

One of the most visible outputs of webometrics is the ranking of world universities based on their websites and online impact. Webometrics includes, as noted by Telwall (2008), 'link analysis, web citation analysis, search engine evaluation and purely descriptive studies of the web together with the recent addition of the web analysis of web 2.0 phenomena'. Webometric studies have been conducted by both Knowledge and Information Science specialists and Computer Science specialists with different reasons. Within Knowledge and Information Science, webometrics has changed and expanded from its initial focus on bibliometric-style investigation to more descriptive and social science oriented research. Certainly, webometrics will continue to evolve in response to new web developments and to give valuable results.

Webometrics research also has shown some shortcomings. Although the Web is available for all to access, it has no quality control unlike the ISI publication lists. As a result, the data tends to be of lower quality. The Web data is also not standardized so that it is difficult to extract all except the simplest data like link counts. It is also difficult to separate out web citations in online journal articles from those in online course reading lists. Hence webometric results tend to be the total of a mix of sources with variable value. Although the web data can be timely, it can be impossible to find publication date of a web page and so webometric results typically combine new and old web pages into one data set. In many cases, the web data is also incomplete in arbitrary ways.

1.2 Reading Comprehension Exercises

1.2.1 True/False Items:

Decide which idea is true (T) and which idea is false (F). Try to find a reason for your decision.

1. Webomeric research suffers from some shortcomings which originate from financial problems. ☐
2. Quantitative analysis of scientific research output was largely achieved by Cattell and his colleagues. ☐
3. The abbreviation "JASIST" stands for one of the main factors contributing to the advancement of webometrics. ☐
4. One of the most visible applications of webometrics is the ranking of world universities. ☐

1.2.2 Multiple-choice Items:

Using the information given in the passage, choose the best choice (a, b, c, or d) to answer the following questions.

1. It can be inferred from the passage that
 - a) metric studies faced evolution during past years, but the main concepts are relatively alike
 - b) Science Citation Index had a great role in the evolution of webometrics studies
 - c) the most well-known factor for ranking journals is not clear yet
 - d) scientometrics is a field which is only used by Knowledge and Information Science specialists
2. According to the passage, the first steps to form bibliometrics criteria were taken by.....
 - a) ISI
 - b) Bradford
 - c) Garfield
 - d) Cattell
3. Which of the following items is not among the different subareas of scientometrics?
 - a) structural
 - b) dynamic
 - c) contextual
 - d) evaluative