A Tentative Discussion of the Limitations of Health Information on the Internet in Taiwan

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ABSTRACT

Health information on the internet is important for consumers. Recently, the need to evaluate websites for the content quality of health information that may increase benefits to the public has been identified in most countries of Europe and North America. However, research that has empirically documented the quality of health information on websites, and indicated their measuring criteria is scant, which is especially true of Taiwan. Therefore, the aim of this paper is to present a discussion of the striking weaknesses of the related health information provided on the internet in Taiwan, and to discuss the need to set up an internet criterion of assessing such information on the internet in this country. This paper involves a non-systematic literature review concerning health information available on the World Wide Web. It relates to advantages and disadvantages, and criteria of evaluating online health information in Taiwan. The result of this paper has revealed that only the *Symbol of National Quality Health Information Online Award* is undertaken by the government of Taiwan but it is not mandatory for assessing the quality of health information on websites. Public users searching health information or knowledge on the internet may suffer difficulty in judging the accuracy and validity of health-related information provided on the internet in Taiwan. Accordingly, people's health and lifestyle may be negatively affected. In general, this paper has presented a comprehensive discussion of the available health information on the internet in Taiwan, and demonstrated the importance of understanding the quality of health information on the internet for public users. The significance of this paper is to raise the issue that an urgent need to develop a set of independent criteria for evaluating health information on the internet in Taiwan should be highlighted and satisfied without delay.

Key words: health information, e-health, health informatics, Word Wide Web, website.

1. INTRODUCTION

In the new global information age, medical/health information has become a central issue for the public purpose. Recent developments in the field of health information have led to a renewed interest in evaluating the quality of the web-based content related to health information. So far, however, there has been little discussion about how the public use and assess the content of health information on the internet, which is also a major concern in Taiwan.

There are three primary objectives of this paper: (1) to describe the health information available on the internet for people in Taiwan; (2) to discuss the advantages and disadvantages for people using online health information in Taiwan, and (3) to access health information and the criteria available for evaluating websites.

This paper is divided into four parts. The first gives a brief overview of the development of health information for the public and the definition of health informatics and e-Health. The second part of this paper illustrates the public use of health-related information on websites by discussing its advantages and disadvantages. It will next go on to the criteria for rating health information on the

internet. Finally, conclusions are summarized and suggestions made for the improvement of health information on the internet for public use in Taiwan.

1.1 What Is E-Health and Health Informatics?

It has become very popular to apply computer science and technology to healthcare/medical fields, especially, for physicians, health professionals and other health providers who offer health-related information on the internet as e-health or health informatics. The following may help better understand the meaning and concept of e-health or health information and could also improve how public users seek health information on the internet.

According to Eysenbach (2001), *e-health* can be defined as "an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the internet and related technologies (p. 1)."

The term *health informatics* more specifically means healthcare knowledge and the technology concerned. Hasman (1998) defines *health informatics* as "the discipline concerned with systematic processing of data, information and knowledge in medicine and healthcare. Its domain covers computational and informational aspects of processes and structures in medicine and healthcare and its aim is to study the general principles of processing data, information and knowledge and to provide solutions for problems related to data, information and knowledge processing (p. 213)."

Due to widespread use of the term "e-health," it sometimes may be equated with health informatics. In this paper, the term *health information* will be used in its broadest sense to refer to all health-related information provided for the public for keeping wellness and a healthy lifestyle, preventing disease, life management, and making decisions in association with personal health issues on the internet.

1.2 Health Online

Health information now reflects the miraculous changes in communication technology and the evolution of the internet (Yellowlees & Brooks, 1999). It is broadly used by many individuals, academic institutions, health professionals, organizations, health-related companies, and the government. The public, including not only patients but also consumers, obtains healthcare knowledge on websites more often than before. They gain health/medical information which health professionals provide on the internet about health problems, self-care, prevention, and online health support groups (Benigeri & Pluye, 2003). Moreover, interactions can be found on websites, such as the communication between physicians and patients and discussions in a forum where members have formed support groups.

Computing technology has also been applied to healthcare fields, for example, data transmission for hospital-to-hospital, and hospital-to-government with the internet-based medical record or personal care card for health insurance. This new era of health information thus helps public users seeking health/medical information specific to their needs.

2. HEALTH INFORMATION ON THE INTERNET IN TAIWAN

Taiwan is an island surrounded by several other smaller islands. It is located in East Asia and has a population of about 23 million. Nowadays, there are approximately 15.23 million internet users in Taiwan (Taiwan Network Information Center, 2007). One survey showed 91% (n=7,709) of those surveyed used the internet and 15.3% searched for medical/health-related information on websites in 1999 (Focus on Internet New & Data, 1999).

Another survey entitled *Computer assisted Telephone Interviewing Survey* was conducted from 1st December 2006 to 15th January 2007. The results of this survey indicated that most people (67.37%, n=3,199) used the Word Wide Web and 2.35% of people obtained health information from the internet (Taiwan Network Information Center, 2007). These investigations did not explore the public use of the internet for health/medical purposes, needs, or the problems arising from using the internet.

Hsu (2005) highlights the need to explore Taiwan public users' interests and information needs as well as the problems they experience when accessing information from medical websites. In 2002, Hsu (2005) conducted a survey in which she used the method of simple random sampling and systematic random sampling and selected 1,043 samples in Taipei, Taiwan. Of these respondents, 73.2% reported having access to the internet and 26.8% did not use the internet. Of those who use the internet, over half (51.9%) reported using the internet to find health information, while the other portion of respondents (48.1%) said that they had never accessed health-related information on websites. The numbers of people accessing healthcare information indicated the topics of disease information (46.5%, n=396), diet consultation (34.8%, n=396), medical news (28.5%, n=396), and cosmetology (28.5%, n=396). In her analysis of the public using health-related websites, Hsu (2005) listed six reasons why the public had not used health information on the internet including lack of time, poor internet accessing skill, no driving force (motivation), dissatisfaction with the information, no reliable information about health, and incapacity to meet the information needs. Therefore, Hsu (2005) suggested that to improve the use of important healthcare information on the internet, it is important to understand the needs and preferences of the public, to enhance the skills required to access health information, and to improve the functions of health/medical information on websites.

2.1 Health Information Available on the Internet for the Public

In general, the public can find the health/medical information they want about disease, for prevention and treatment as well as other healthcare topics on the websites. Cline and Haynes (2001) mentioned searching for health information on websites, looking for a support group, and consulting with healthcare professionals.

Concerns about health information available on the web led to a focus on the quality of health information sources. Generally, any public user may use a search engine to seek health-related information. There are three major search engines in Taiwan including Yahoo (2007), PChome Online (2007), and Google (2005). The

sub-directories can be seen from their health-related directory. It is clear that the public can access these health-related websites and search for the information they need.

Alternatively, the sources for consumers accessing online health information in Taiwan can be classified in seven primary ways. The categories are as follows.

- **Government sites,** where the department of health, medicine, and welfare offers consumers guidelines, sources of contact, and official documentation --- Organiations affiliated with Taiwan's Department of Health (Department of Health 2006a) include the Bureau of Health Promotion, Centre for Disease Control, National Bureau of Controlled Drugs, Bureau of Food and Drug Analysis, Bureau of National Health Insurance, Committee on Chinese Medicine and Pharmacy, National Health Research Institutes, ten General Hospitals, five Psychiatric Centres, one Chest Hospital, Health Centres, Formosans-e Medical School (with HONcode and open to the public, see Figure 1, Taiwan e-Doctor, and e-Library (official use only).

- **Private hospitals and clinics** which often provide accurate information for public users and patients --- Such sites usually include the visitor, the media, department listing, facilities, services, and contact information for public users. Sometimes, these sites provide health knowledge and arrange lectures for the public. For example, the website of JEN-AI HOSPITAL, private hospital which has obtained the HONcode, as shown in Figure 2.

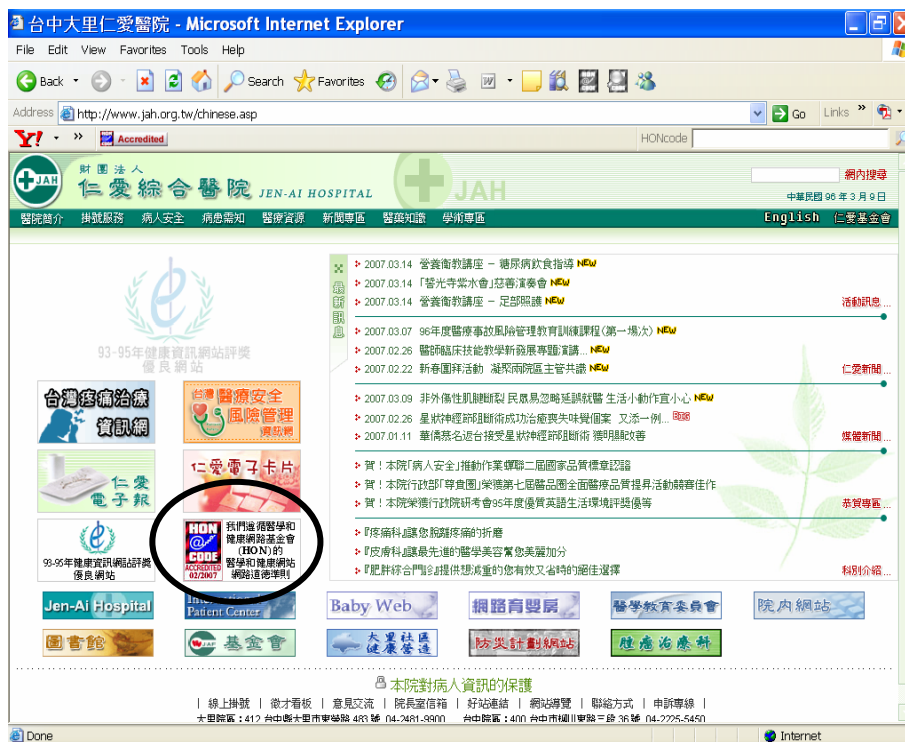*Figure 1.* The Formosans-e Medical School. Source: Department of Health, (Department of Health, 2006b).

Figure 2. JEN-AI Hospital in Taiwan (2007). Source: http://www.jah.org.tw/.

- **Personal webpages** which are usually edited by individual physicians or professionals with health backgrounds who provide articles or information for the public or health professionals alike, such as Old Doc Wu's Home, the Taiwan community Psychology Net, etc. --- These sites often contain personal viewpoints, health/medical information, and question and answer columns.
- **Professional groups,** such as the Taiwan Association for Medical Informatics, PsychPark, etc., which have a vested interest in providing accurate information for public users and their members --- They not only offer services to the consumer but also provide health-related information for health professionals, for example, Liver disease prevention & Treatment Research Foundation, National Kidney Foundation, Taiwan Foundation for Rare Disorders, Formosa Cancer Foundation, and so forth.
- **Official organizations** which are often composed of patients and their families, who already publish periodicals, and often develop their own resource pages with information and references for viewing --- In Taiwan, these groups on the internet include Taiwan Epilepsy Association, Taiwan Breast Cancers' Alliance, Endometriosis Association Taiwan, Taiwan Thalassemia Association, and so on.

- **Health-related companies and stores,** such as AstraZeneca Taiwan, Doctors, etc., which provide health information to their public users and members --- Included in this category would be the websites of health commerce, who describe their products and provide health information and knowledge, question and answers obtained from volunteer physicians. For example, the Doctors (1998) offer consultation on the internet as Figure 3.
- **Magazine-style websites** usually edited by professional journalists with different backgrounds who provide articles for the public and health consumers alike and are paid for by advertisements, e.g., the Journal of Taiwan Association for Medical Informatics, Common Health Magazine, and For All Health.

Almost all the healthcare information websites listed above can be accessed by consumers. What are the benefits and drawbacks to consumers? Can the public receive a high quality of health information? These questions are discussed below.
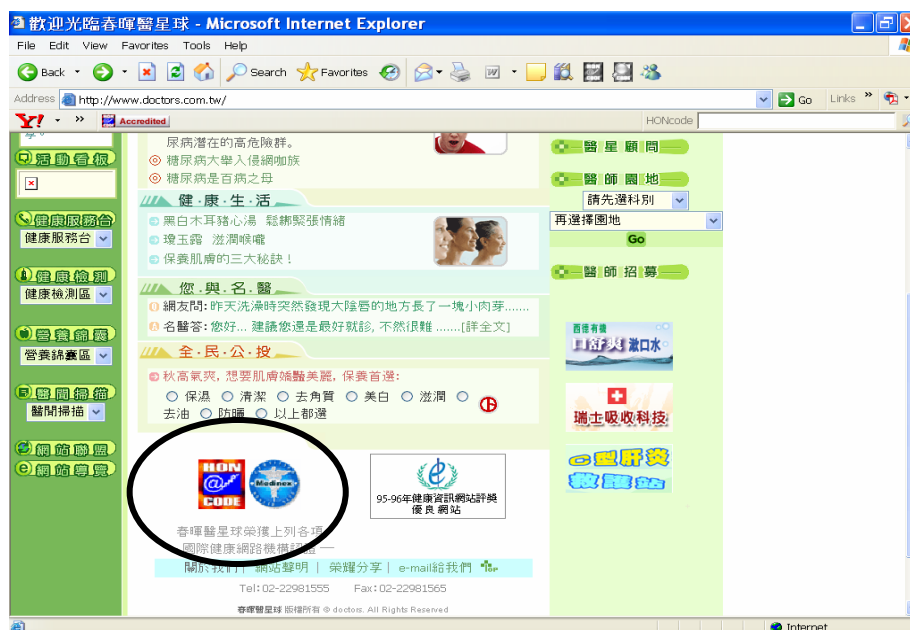

Figure 3. The Doctors (1998). Source: http:// www.doctors.com.tw/.

2.2 Health Information for the Public

2.2.1 Advantages

Seeking health-related information on the internet my bring lots of potential benefits to the public. These benefits can be presented as follows:

- Free and broad access to health information. In other words, there are no space and time barriers of traditional information searching problems (Cline & Haynes, 2001).

- Interaction creates an opportunity to enhance the relationship between physicians and patients or public users, and contributes to the physician-patient cooperation.
- Prevention can be a major potential benefit brought by health/medical information on the websites, especially good for chronic diseases. Public awareness of preventive health education may be raised (Wu, 2005).
- Online health information is contrary to traditional sources of health information (e.g., books, leaflets, videos, and tapes). How the public seeks health information on websites depends on personal needs, education, knowledge, language and so on (Cline & Haynes, 2001).
- Communication without face-to-face meetings may be good for some public users or patients, in particular on sensitive topics. These people can obtain health information and also communicate with physicians through the internet.
- The internet offers opportunities for physicians to express themselves. For example, Dr. Wu (2001) established the website of *Old Doc Wu's Home* which educates, not only public users, but also health professionals.
- Changed health behaviour may be another benefit for public users. The public may be able to change their health behaviour through relating interpersonally with physicians, health professionals, peers, and support groups.

2.2.2 Disadvantages

There we look at the most important disadvantages for the user seeking health information on the internet. Cline and Haynes (2001) identified several disadvantages for the public seeking online health information or knowledge, and these include difficulty of access, information overload, disorganization, searching difficulties, inaccessible or overly technical language, lack of user friendliness, lack of permanence, lack of peer review or regulation, inaccurate, misleading and dangerous information, and maladaptive behaviour.

One question that needs to be asked, however, is about equality of access to online health information. Some public users may still have no computer or broadband access, although both computers and broadband are growing in Taiwan. For instance, according to the Taiwan Network Information Centre's survey (2007), people aged 56 and over (16.6%, n=3,199), income below NT$20,000 (30.63%, n=3,199), and education below high school (30.42%, n=3,199) are less likely to access the internet. The population of elderly people and the less educated include those with many health problems, so the internet will give full scope to its functions only if health information is designed according to the needs of these people with the greatest need.

3. THE CURRENT CRITERIA FOR EVALUATION OF HEALTH INFORMATION ON THE INTERNET

Healthcare information is different from other types of information in terms of concept. The former requires professional knowledge associated with medicine/health. Because it is so important to life issues, health information must

deliver accurate medical/health knowledge to the public. Therefore, to be able to overcome these disadvantages, it is important that the evaluation of health information on the internet needs good criteria for assessing and surveying its work for the public.

The past decade has seen the rapid development and diffusion of websites designed for healthcare-related purposes. So far, there has been little indication that a lot of health information on websites is either harmful or misleading and can pose some dangers for public users (Eysenbach et al., 1998; Impicciatore, Pandolfini, Casella & Bonati, 1997).

Increasing concern over measuring the content quality of health information on the internet requires an evaluation for improving appropriateness and accountability. For that reason, the most important criteria relate to public user needs are required, even though they are difficult to develop and measure (Kim, Eng, Deering & Maxfield, 1999).

3.1 Criteria for Evaluating Online Health Information

Recent developments in the criteria for evaluating healthcare information on websites have heightened the need for internet users searching for health/medical information. There is a small number of criteria currently employed or proposed to evaluate health-related websites and fewer criteria with rating tools for the public to use when they search for health information.

According to a survey which was conducted from the Health On the Net Foundation (2005), most familiar certifications, accreditations or trust marks for systems in Europe and the USA are: HONcode (51.1%, n=1,500), Good House Keeping (32.27%, n=1,500), Trust-e (28.9%, n=1,500), IHC (20.9%, n=1,500), MedCircle (12.4%, n=1,500), Web Medica Acreditada (7.4%, n=1,500), and URAC (7.1%, n=1,500). Unfortunately, although there are numerous professionally generated criteria to assess health-related websites, this criterion has not been systematically applied on healthcare websites, both in the creation and evaluation process. Therefore, it will probably be of benefit for the public to research the quality of health information on the internet when it is integrated with the criteria and evaluation process for rating health-related information on websites.

The main criteria for assessing health information on the internet from familiar organizations are listed in Table 1. There are many important tools offered by these organizations. For example, HONcode provides a tool, *HONcode Toolbar* for Internet Explores, it is free to download and assists public users in checking the accreditation of the website being reviewed (Health On the Net Foundation, 1997). The *Information Quality Tool* was provided by The Health Information Technology Institute of Mitretek Systems (Health Summit Working Group, 2000). The *MedCIRCLE Infobar* is another tool for helping public users to rate health information on websites (The MedCIRCLE project, 2003). It can browse through the open archive and search through all websites that have been described with the HIDDL vocabulary (Health Information Disclosure, Description and Evaluation Language) which is used by health information providers to describe and evaluate health information on the Internet. The HIDDL vocabulary has ten main criteria

that include feedback, identity (information provider), operation, accessibility, content, disclosure, identity (sitespecific), policies, quality, and service; each criterion contains several elements and sub-elements.

Finally, The DISCERN provides a concise questionnaire with validation and reliability (The DISCERN Genetics Project Team, 2005). It is useful for consumers to rate the quality of information on choices for a health problem. Moreover, the QUICK (Quality Information Checklist) (HDA and CHIQ, 2000) encourages consumers to use QUICK checklists to check the information and ensure that they are not being given the wrong information. This paper has only examined some criteria for evaluating online health information and tools for consumers to check the quality of health information on websites. It was not specifically using a systematic search for all criteria and tools. Therefore, only some criteria and assessing tools are provided in this paper.

3.2 The Criteria for Rating Health-Related Websites in Taiwan

It should be noted that the objective of the criteria is not to develop a method for the implementation of a specific tool for rating health information at a Taiwanese level in Taiwan. In Wu's research (2001), he strongly suggested seven criteria – authority, authorship, sponsorship, contact route, whether the career of editors was shown, disclaimer, and timing – for the content of health information on the internet in Taiwan.

Furthermore, Wu (2001) used the seven criteria to assess 40 websites in Taiwan and found drawbacks to these websites. These flaws regard interactive websites; warnings and disclaimers; easy access; accuracy and visual appeal; misplaced, broken and obsolete hyperlinks; the level of the contents for public user health information; search engine and categorized medical directories.

Concerning the importance of standards and policies for assessing the quality of health information, the government and health professionals may ignore their responsibility on this subject in Taiwan. A special mention to the Symbol of National Quality Health Information Online Award (Department of Health, 2002) was established in 2002, sponsored by the Department of Health, Executive Yuan, and undertaken by the Institute for Biotechnology and Medicine Industry. Annual entry to the competition is free, and the entrants are categorized as general health information websites; hospital-based websites (large teams); hospital-based websites (small teams); special disease-based topics, clinics, and individual websites; foundations, associations, or institutes' websites; Department of Health affiliate organizations, and Health Centres. For evaluating health information websites, the judges include health, medical, pharmacy professionals, and specialists in computer science. The criteria for rating health information websites include the accuracy and validity of the content, the protective policy for basic information and right of privacy, the updates and quality of the content, the structure of the websites, the adequacy of providing information, and the maintenance of the websites (Department of Health, 2002). However, the Symbol of National Quality Health Information Online Award is only a reference for the public seeking health information on websites. The government does not promise to

Table 1. *The criteria for rating the quality of health information on the internet for public users*

The Health On the Net Foundation: HONcode (1997)	The Health Information Technology Institute of Mitretek Systems: Health Summit Working Group (2000)	eHealth Code of Ethics (Internet Healthcare Coalition, 2000; Rippen & Risk, 2000)	Quality Criteria for Health Related Websites (Europe's Information Society, 2007; The Commission of the European Communities, 2002)	The Code of Conduct (Mayer, Leis, Sarrias & Ruiz, 2005; Web Mèdica Acreditada, 2005)
Authoritative: indicate the qualifications of the authors. **Complementarity:** information should support, not replace, the doctor-patient relationship. **Privacy:** respect the privacy and confidentiality of personal data submitted to the site by the visitor. **Attribution:** cite the source(s) of published information, date and medical and health pages. **Justifiability**: site must back up claims relating to benefits and performance. **Transparency:** accessible presentation, accurate email contact. **Financial disclosure:** identify funding sources. **Advertising policy:** clearly distinguish advertising from editorial content.	**Credibility:** source, currency, relevance/utility, editorial review process **Content:** accuracy, disclaimer, and completeness **Disclosure:** purpose, profiling/collection of information **Links:** selection, architecture, content, back linkages **Design:** access, logical organization (navigability), internal search capability **Interactivity:** includes feedback mechanisms and means for exchange of information among users. **Caveats:** clarification of whether site function is to market products and services or is a primary information content provider.	**Candor:** disclose information that if known by consumers would likely affect consumers' understanding or use of the site or purchase or use of a product or service. **Honesty:** be truthful and not deceptive. **Quality:** provide health information that is exact, easy to understand, and the latest. **Informed consent:** respect users' right to determine. **Privacy:** respect the responsibility to protect user's privacy. **Professionalism in online health care:** respect fundamental ethical obligations to patients and clients. **Responsible partnering:** ensure that organisations and sites with which they affiliate are trustworthy. **Accountability:** provide meaningful opportunity for users to give feedback to the site.	**Transparency and honesty:** transparency for provider, purpose, objective, and all sources of funding for site **Authority:** clear statement of sources for all information **Privacy and data protection:** for the processing of personal data **Updating of information:** clear and regular up to date of the site **Accountability:** user feedback, and appropriate oversight responsibility, responsible partnering, editorial policy **Accessibility**	**Certification** **Identification** **Contents** **Confidentiality** **Control and Validation** **Advertising and other sources of financing** **Virtual Consultation** (Document of the Ethics Committee) **Non-compliance and responsibilities**

Source: HONcode (1997); The Health Information Technology Institute of Mitretek Systems: Health Summit Working Group (2000); Internet Healthcare Coalition, 2000; Europe's Information Society, 2007; Web Mèdica Acreditada, 2005.

take responsibility for the quality of healthcare information in Taiwan. Proper criteria, therefore, should be developed and established for guaranteeing the quality of health information provided for public users in Taiwan.

4.CONCLUSIONS

This paper has explained the importance and limitations of health information on the internet for public users. Although one may gain much health/medical knowledge by viewing online healthcare information, the content quality of health information websites and their effects need to become more visible to public users. There is a risk of drowning in a sea of poor quality health information. Thus, it is important to make clear the role of health information and the problems of evaluating such information.

This paper also describes and evaluates the role of health information on websites. Many evaluation problems have arisen, and they must be addressed because they greatly influence the quality of life in the real world. Furthermore, to assess the reliability of health information on the internet we must determine how it may help people deal with common health problem.

The overall implications of this paper raise at least two important issues for health information in Taiwan. The first concerns the need for more investigation to explore the needs of consumers seeking health information in Taiwan. The second issue is the urgent need to establish criteria for evaluating public-oriented health information on the internet in terms of accuracy, completeness and consistency. Therefore, this paper suggests that an independent, non-profit organization in Taiwan may be required to develop a set of criteria to deal with the processing of health-related data, information, and knowledge on the internet.

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