



HEDAYAT CENTRE

COMMUNITY SUPPORT & GUIDANCE

Teaching Challenges in the Era of Zeros and Ones

- | Data Confidentiality |
- | Knowledge and Pseudo-knowledge on the Web |
- | Searching for Knowledge from the Sky to the Web |
- | Guiding Student | Researches on the Internet |

Baran Letter -1

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The First Challenge: **Data Confidentiality** *What to Do About Private Information on the Web?*

Hossein Ghaffari

Times have changed. Children of our times are no longer like the children of olden days, nor is the school limited to its traditional walls. The media has now become a serious competitor of schools in educating children. So why should teachers remain limited to their traditional instruments? Children expect their teachers to hold their hands and run along with them in the “world of zeros and ones”. Are we (teachers) ready?

The world of zeros and ones is the world of “storing” and transmitting the information. All the systems used in cyberspace monitor and store user information in some way or the other. Even systems that do not require a username and password to access the service identify and monitor users’ ports, connection duration, and the type and duration of navigation in different ways.

One of the constant challenges users

face with Internet service providers is the accessibility of Internet systems to private information. In recent years, the news of systems abusing users’ information has caused a great deal of controversy. One such abuse was the illegal use of “Cambridge Analytica” company of the private information of more than 80 million “Facebook” users in the 2017 US elections, which led to the response and apology by the CEO of Facebook in the US Congress.

In May 2018, and after years of bargaining and negotiation, the General Data Protection Regulation (GDPR) became operational in the European Union, and all small and large Internet service providers amended their method, procedures, and conditions of data protection and information confidentiality and were forced to exercise strictly monitor the leakage of data from their systems. Since it is not yet clear how effective the strict rules such as the GDPR are in protecting our data, it is probably best to take care of our own information. Thus, we should know and teach our children that there is no such thing as “private information” on the web.

Everything we put on the web is, regardless of the access and the communication platform, divided into two parts:

1 - Disclosed public information: What we voluntarily upload to web pages and systems and make available to the public; such as the Profile Picture or the comments below the content in the news sites.

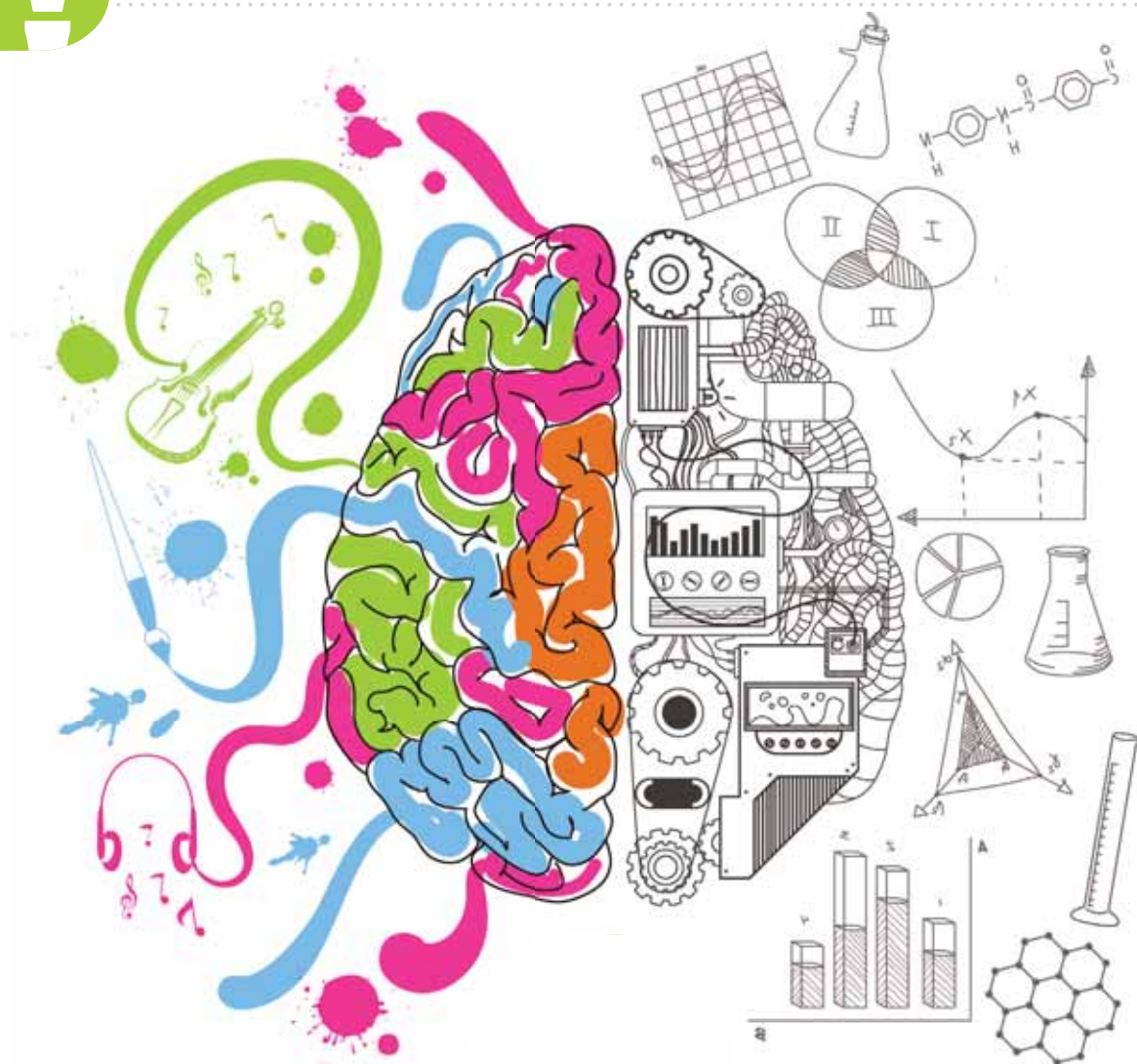
2 - Undisclosed public information:

What we have voluntarily sent to someone through Internet systems; like e-mail and text messages, or were forced to provide (at ports of entry to systems or programs), and apparently, no one but ourselves has access to it.

As regards the first part, we should teach our children that they should never voluntarily disclose their private and personal information to the public. But let us not forget that the second part of the information, too, is in danger of being disclosed at any moment for various reasons.

These reasons include “breach of commitment”, “blind hacking”, “purposeful hacking”, “change in the legal rules of the service provider”, “judicial order” and “transnational laws”. Keeping these in view, it is probably reasonable to avoid using cyberspace as a platform for the “storage”, “transfer” or “dissemination” of any private information.





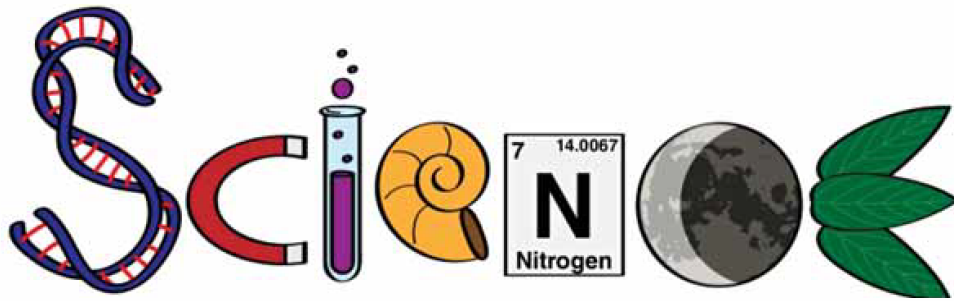
The Second Challenge: Knowledge and Pseudo-knowledge on the Web *How to Distinguish between Knowledge and Nonsense?*

The volume of information available on the web is far beyond our comprehension. This gigantic amount of information, if properly selected, categorized, searched, and used, will be very useful and effective in teaching and learning. But how to do it?

When dealing with a lot of information, it is very difficult to distinguish “right from wrong”, “funny from serious” and “truth from false”. In addition to students, even teachers tend to often fall prey to “pseudo-scientific” information in cyberspace. “Pseudo-science” is a seemingly logical statement and is sometimes based on public facts and experiences that cannot be easily proven or

refuted. The effect of birth month on personality, anti-cancer properties of watermelon seeds, the effect of gravity on human lifespan, the differences between left and right side of the brain, and the effect of music on the shape of water crystals are well-known examples of “pseudo-science”.

“Pseudo-science” uses scientific words and scientific logic to strengthen and establish the positions that do not have a scientific basis, but it is easy and pleasant for the audience to accept them. Why? Because “pseudo-science” usually provides straightforward and easily understood answers to the complexities of the world



around us, which are often accompanied by the popular spice of “exaggeration” or “entertainment.”

As teachers, we need to know and teach children that “pseudo-science” can only be considered “science” if it can be “verified”.

“Pseudo-science” stories are often told in a way that does not allow for “verification”. This means that you cannot verify their authenticity by going to an area, talking to a person, or searching available documents. “Pseudo-science” usually attributes itself to “the latest mysterious research by scientists”, “the secret sayings of the great people”, or “the secret achievements of the superpowers”. It is a very effective skill. In this way, the audience is completely disarmed and has no choice but to accept. Remember, the author of no article or news item has access to “the unseen”. There is no reason to simply trust someone who claims to have the “knowledge of the unseen”.

Another boundary between “science” and “pseudo-science” is the possibility of the “reproducibility” of claims. Many “pseudo-science” claims have been tested only once and no similar results have been obtained in subsequent simulations. We should not even be deceived by the claim of “reproducibility”. The forgers of “pseudo-science” have counted on our laziness and know that out of every few thousand people, only one person may have the patience to repeat an experiment. Therefore, they may talk of “reproducibility” with high self-confidence.

Know the official sources of scientific and technological news and do not be deceived by brokers. These two simple conditions, the possibility of “verification” and “reproducibility” must be practiced many times so as not to be deceived. For example, the old claim of “using the dreaded Haarp to create an earthquake” cannot be “pseudo-science” if

it can be confirmed by observation and experiment and can be repeated over and over again.

Unfortunately, one of the tricks of making people believe in “pseudo-science” is mixing it with religious beliefs. Taking advantage of people’s religious beliefs is one of the most painful ways of the expansion of “pseudo-science” in the whole world. In this regard, too, compassionate teachers have the important responsibility of clarifying the boundaries of religion from superstition by resorting to religious sources (revelation, narration, and reason). Let us remember that religion is not strengthened by the promotion of “pseudo-science” and superstition-based religiosity is of no virtue and truth does not need any makeup.

Due to its attractiveness and the strong possibility of the acceptance of “pseudo-science” by people, virtual media republish a wide range of these strange statements and news items about various topics every day and on every occasion. Let us learn and teach children that republication of “pseudo-science” does not reflect our awareness and knowledge and does not result in the expansion of public awareness and knowledge. Thus, when faced with “pseudo-science”, we should be able to exercise restraint!





The Third Challenge: Searching for Knowledge from the Sky to the Web *What Exactly Is Wikipedia Good for?*

Shortly before the Web covers all aspects of our lives, i.e., less than twenty years ago, public and specialized libraries, local and national archives, personal documents, and vaults of scientists and professors were the only place storage and preservation of human knowledge; and the sure way to understand the meaning of an unfamiliar word, to know about a distant city, to understand the secrets of a physical phenomenon, to solve a jurisprudential problem, to remove ambiguity from a philosophical mystery, etc., was to refer to dictionaries, encyclopedias, biographies and the like.

One can hardly believe now that twenty years ago, at times one was required to take an intra-city trip to the downtown library to conduct student research. After obtaining the reference book, one had to go through it once from the beginning to the end, once from the end to the beginning, and sometimes from the middle to the beginning and end to find the desired entry and then start his study.

Today, students go to the “web” in one way or the other to solve their personal issues, to resolve academic problems, to their research assigned in their class, or even find the answer

to their exam questions. And “Web” is a vast sea swimming in which is not so easy!

Thus, one has to be smart enough to get the right answer. But if like children, you, too, ask your questions from Google, you should know that this kind of search engine usually gives you the first and foremost answers from Wikipedia, and it does not matter whether you have asked about a famous poet, an aquatic insect, a historical battle, or a healing medicine. Usually, “Wikipedia, the free encyclopedia” responds to your question quite fast. But how much can one really trust this all-knowing scholar of the cyber world?

As teachers, we need to know and teach children that “Wikipedia” and all its related wikis (such as Wiktionary, Wikibooks, Wikitravel, Wikiquote, Wikisource, Wikimedia Commons, and Wikidata, etc.) are very different from encyclopedias, reference books of libraries (according to Wikipedia itself). Wiki is usually a type of website that allows all its visitors (even sometimes without registration) to edit, add or remove contents. Wiki is not written by professional writers and has rather been designed for the common visitor. Moreover,



the foundation of changes in the wiki is based on collaboration; i.e., the more user collaboration in editing a page, the more varied and possibly complete that page becomes.

This process is very different from what we know about the conventional method of encyclopedia compilation. This means, that instead of a few trusted experts engage in collecting and evaluating content in a controlled process, in a scientific method, and in a closed environment, the job of collecting and evaluating the contents in the web environment is entrusted to the general public. For example, more than six hundred thousand entries in Persian, have been created and edited by more than seven hundred and seventy thousand Wikipedia users over a period of about fifteen years since 2003, and this process continues every month and with the participation of more than two thousand users, resulting in tens of thousands of edits. This dynamism and lack of focus in the process of collecting and publishing content, which is the main feature of Wikipedia, has led to the formation of serious criticisms of this free global encyclopedia.

Critics have questioned the validity and credibility of Wikipedia for its “freedom of editing”. Wikipedia has also been criticized for “vulnerability to sabotage”, “non-uniform quality of articles”, “systematic bias”,¹ “instability”, and for “preferring consensus to credibility” with regard to the style of editing the articles. Blind faith in the manipulated content of Wikipedia has resulted in many incidents during these years, contemplation on which leads us to conclude that caution is a prerequisite of wisdom in using Wikipedia.

As teachers, we must know and teach children that perhaps Wikipedia may be used as the “first source” to help us get the answers we need, but we should not rely on it as the “last source”, and we should always verify the findings on Wikipedia with other authentic sources. If the enlargement of the web these days has resulted in spending less time to access scientific sources, **we should devote the time saved to the validation of electronic sources** and not forget that scientific activity has always required great care and perseverance.

1. For example, it is interesting to know that most of the contributions made in writing and editing “Persian content of Wikipedia” have been and are done by users living in Europe and North America, and the share of the users from Iran is only %45.



The Fourth Challenge: Guiding Student Researches on the Internet *What Is to Be Done with Copying and Digital Plagiarism?*

One of the traditions of the field of teachings inherited from the previous generations is to encourage a passive student to study and do small classroom research in order to make him/her an active element in the classroom. Even a number of teachers still devote part of their ongoing classroom evaluation to precis writing, short articles, or doing library research. These activities are so traditional that you must have experienced them yourself as a student during your school years and have dealt with this issue as a teacher.





Nevertheless, in the last decade in which digital access to cyberspace has expanded in parallel with the general development of digital content on the Internet in different languages, it has become increasingly difficult for teachers to guide and evaluate student research. Although it seems that easier access to scientific and educational content in cyberspace should have paved the way for the expansion of awareness and knowledge in students, the Internet has quickly become a bandit of children's path to reading and research, and their accomplice in fraud and transcription.

We all now know that children's distance from finding answers to questions, resolving any ambiguity, and solving any riddle that teachers put forward to deepen their knowledge and consolidate what they have learned is just as far as searching cyberspace. This is to the extent that a new proverb "Do not think, search!" has come to circulate among children in the last two decades. Now the question is as to how to define research for children under this new situation so that it does not end in copying? And how should student research be conducted and evaluated?

As teachers, we should know and teach children that the definition of knowledge has changed in the digital age. Ownership of information is of little value today, and it is the ability to access information that empowers scholars. Thus, downloading hundreds of e-books to one's personal computer, storing large amounts of images and videos on smartphones, and constantly connecting to Google is not a sign of knowledgeability. Rather, the ability to find the right answers to questions



from reliable and authentic sources and to compare different approaches to resolving ambiguity using online sources is a sign of "digital wisdom". Therefore, student research should not be defined solely as a collection of information or the discovery of the answer to a riddle, but the research of the digital age should be competitive with regard to validating sources and analyzing contradictory findings.

As regards this process, teachers must, of course, make sure that students have personally studied and analyzed the minimum acceptable amount of research content. For this purpose, children can be asked to submit a summary of their search and study results in written form and in several stages, preferably in their own handwriting.

Oral presentation of research results can also be used to evaluate the study process. Attractive activities such as presenting the results in the form of self-recorded video, producing simple media products such as a computer poster, or making a PowerPoint file at the end of the research process can help consolidate children's research learning and introduce them to the positive functions of digital instruments. Of course, this stage of research is very much safe with regard to copying or plagiarizing.

Last but not the least, let us not forget that despite all the changes in the new generations, being seen and noticed in school and in the classroom is the best reward and encouragement even for the children of the recent decades. Thus, in evaluating children's work - in addition to measuring the accuracy of research findings and benchmarking the research process - it is possible to display the media products of students and to launch a healthy competition based on scientific hard-working and artistic-media creativity.



Times have changed. Children of our times are no longer like the children of olden days, nor is the school limited to its traditional walls. The media has now become a serious competitor of schools in educating children. So why should teachers remain limited to their traditional instruments? Children expect their teachers to hold their hands and run along with them in the “**world of zeros and ones**”. Are we (teachers) ready?



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