An Information Literacy Framework for Schools: The Hong Kong Experience

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Abstract

The Education and Manpower Bureau of the Hong Kong Government has promoted 'Learning to Learn' as a crucial feature of student-centred curriculum and the educational reforms over the passed decade have been directed towards this goal. Recently, information literacy, described as: the ability to master the processes of becoming informed, was identified as the missing ingredient in the reform. Interest in information literacy grew out of a realization that the application of modern information and communication technology and related shifts in curriculum integration and a shift away from textbooks and examinations, was not sufficient to deliver learning to learn.

Introduction

A study was commissioned by the Hong Kong Government to develop an information literacy framework that would enable teachers of all subjects to infuse education for information literacy across the curriculum. In addition the study sought to identify levels of teacher concern and understanding with respect to information literacy, and ultimately to identify their readiness for its implementation. To achieve these objectives, a region-wide questionnaire survey, focus group discussions and consultation sessions were held. Although an overwhelming majority of the education practitioners did support the idea of having such framework for all schools, there were diverse opinions and concerns on its implementation in practice.

In 1998, the Education and Manpower Bureau (EMB) of the Hong Kong Government announced the five-year strategy which included guiding education practitioners to integrate ICT (information and communication technologies) across the curriculum, and to create a culture in which learners would develop lifelong learning skills, knowledge and attitudes. Following detailed evaluations of the success of the ICT rollout (EMB, 2004, March) in achieving these objectives, the EMB proposed a broad framework of information literacy (IL) for Hong Kong students (EMB, 2004, July) together with stakeholder reactions regarding the implementation of this framework. A task group which consisted of the University of Hong Kong, Hong Kong Institution of Education, Chinese University of Hong and the Hong Kong Baptist University was commissioned by the Steering Committee on Strategic Development of Information Technology in Education to establish a framework for these tasks and eventually consultants were engaged, via a tender process, to manage the project.

Literature Review

The 21st century has spawned a digital culture in which information can be readily accessed on the Internet. It could be argued that for a growing majority of the population the Internet has become the first stop, and sometimes the only stop, as an information source (Silberschatz, Stonebraker, & Ullman, 1996). Of course the Internet holds answers for just a proportion of information seekers since much of the world is still without electricity and access to ICT that would enable participation is thus denied to many (Hargittai, 2003).

Not only is information going digital, the very existence of such information has facilitated the emergence of the global village (McLuhan & Powers, 1989) from an idea to a reality. Globalisation is being driven by national and international deregulation, and by the IT related communications revolution (Houghton, 2002). With advances in technological development, information can be shared quicker and wider, leading to the idea of a "ubiquitous society" for those who are able and an impoverished society for those who are unable. A ubiquitous society is as a society in which people can access a network anytime, anywhere and for anything (Tomonori, 2004).

The abundance of information that typifies the current century is insufficient to guarantee the emergence of a knowledge society. On the one hand the lack of structure to the Internet is a problem. Boyer (1997) for example stated that for information to become knowledge, it must be organized. And in 1997 the Internet was vastly smaller than it is today but no better organized. Laverty (1997) noted that the lack of organization is compounded by the inadequacy of searching tools and the likelihood that search engines will be unable to sift 'good' from 'bad' information. Despite continued sophistication of search engines and other tools the challenge continues. The question is: do information seekers have the capacity to determine what is valid, authentic and reliable on the Internet. The World Summit on the Information Society in 2003 in its attempt to grapple with these complex issues declared that: "Each person should have the opportunity to acquire the necessary skills and knowledge in

order to understand, participate actively in, and benefit fully from the Information Society and the knowledge economy," (World Summit on the Information Society, 2003).

The information challenge in the developed world has long been recognized as a question of overload rather than a question of deficit. The American Library Association (ALA, 1989) equated the challenge posed by information overload as a call to arms for an informed citizenry who are information literate:

> … A person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the information needed… Ultimately information literate people are those who have learned how to learn. They know how to learn because they know how information is organized, how to find information and how to use information in such a way that others can learn from them.

More recently the Association of College and Research Libraries (ACRL, 2000) claimed that information literacy forms the basis for lifelong learning which is common to all levels of education. They place particular emphasis on the capacity of citizens to be able to deal with social and legal issues. They argue that, "An information literate individual is able to understand the economic, legal and social issues surrounding the use of information, and access and use information ethically and legally."

According to Sanford (2000), information literacy is a process of turning information into meaning, understanding, and new ideas. This definition is similar to that offered by Henri (1995) where he describes, "information literacy as mastery of the processes of becoming informed". This process requires learners to understand the rationale behind using information as well as a set of conceptual and technical skills to deal with information. Learners need to know the 'how', of a task, but more importantly, they must first know the 'why' of the task.

Bruce (1997) points to the reality that there are many perceptions about information literacy and what it actually entails. These include information literacy is seen as:

- using information technology for information retrieval and communication;
- finding information located in information sources;
- executing a process;
- controlling information;
- building up a personal knowledge base in a new area of interest;
- working with knowledge and personal perspectives adopted in such a way that novel insights are gained; and
- using information wisely for the benefit of others.

The fact that there are such a diverse range of perceptions about information literacy is a pointer to the concept's fussy nature as a main stream concept. It also demonstrates that this is not a discipline specific concept but is rather one fashioned through education and work practices.

The divergence of opinions about the meaning of information literacy has had little impact upon the mainstream approach to education for information literacy. According to Bruce (1997), the aim of teaching information literacy should be for students to develop a repertoire of various understandings of information seeking and use and to be able to apply various approaches appropriately to various tasks, contents and situations. The research has found that to become successful self-managing learners, students must acquire comprehensive information skills imbedded across the curriculum. In particular, principals, curriculum coordinators, teacher librarians, and teachers responsible for coordinating IT across the curriculum play an important role in the culture building of information literacy in schools (Henri, Hay and Oberg, 2002) and forming the "learning to learn" infrastructure. Limberg (2005) found in her studies with secondary school students that if information seeking is

about fact-finding, it would not be purposeful for a complex learning issue. Although there is no cause-effect relationship, there is a close relationship between students' way of experiencing information seeking and use and their ways of understanding the subject content (Limberg, 2005). This means that the framing of questions is an important prelude to education for information literacy.

Education for information literacy at the school level has often been piecemeal and driven by individual teachers through the adoption of an information processing model such as The Big Six (*Information skills for student achievement,* n.d.), Kuhlthau's ISP (2004), and Herring's PLUS (2004). The Base 6 curriculum integration programme at the Kuranui College, New Zealand, is an example of a school based framework. It introduced a student-centred inquiry process that was aimed to develop skills appropriate for lifelong learning (Barlett, 2005).

Education for information literacy at the system level has typically been driven either by way of adoption of an enquiry based curriculum such as the Essential Learning model developed in Tasmania (AusTeachers, n.d.) (this development entails a major curriculum reform from within the system) or by way of a set of standards and indicators that can be used to demonstrate what might be reasonably expected from an information literate person (such models have been typically developed outside the school system by professional bodies). Examples of these standards are: the Seven Pillars Model for Information Literacy (SCONUL, 1999) and the Australian and New Zealand Institute for Information Literacy (ANZIIL, 2004). More specifically school orientated standards have been developed by the American Association of School Librarians (AASL, n.d.) and Ontario School Library Association (OSLA, n.d.). The nine information standards of AASL state that the student who:

- is information literate accesses information efficiently and effectively;
- is information literate evaluates information critically and competently;
- is information literate uses information accurately and creatively;
- is an independent learner is information literate and pursues information related to personal interests;
- is an independent learner is information literate and appreciates literature and other creative expressions of information;
- is an independent learner is information literate and strives for excellence in information seeking and knowledge generation;
- contributes positively to the learning community and to society is information literate and recognizes the importance of information to a democratic society;
- contributes positively to the learning community and to society is information literate and practices ethical behaviour in regard to information and information technology; and
- contributes positively to the learning community and to society is information literate and participates effectively in groups to pursue and generate information.

The adoption of an information literacy framework is designed to refocus a school's attention towards how students learn and how they are able to demonstrate their learning.

Research Methodology

There were four components to this study. Firstly, a set of standards on information literacy were proposed based on a selected group of models developed internationally, but also giving consideration to the culture of Hong Kong. Secondly, a region-wide questionnaire was distributed to Hong Kong's primary and secondary schools to gain feedback from education practitioners on the proposed standards. Thirdly, focus group discussions were conducted to enable understanding of the teacher concerns about the proposed standards. Fourthly, a

number of public consultation sessions were conducted which aimed at a wider audience to help gain further input to refine the study.

1. Proposing Information Literacy Standards for Hong Kong Students

Eight selected models were scrutinized to gain understanding on the current IL development trends (Kong et al, 2005, November/December). These models include: SUNY; ACRL; AASL; SCONUL; AkASL, WLMA; ANZIIL; and JULM. Four domains of learning were used to cluster the standards:

- cognitive;
- metacognitive;
- affective; and
- socio-cultural.

This process lead to the development of the following taxonomy.

Table 1

IL Standards in 4 Dimensions – Cognitive (C), Meta-cognitive (M), Affective (A) and Socio-cultural (S)

Code	IL Standards
C1	Able to determine the extent of and locate the information needed
C2	Able to apply information to problem-solving and decision-making
C3	Able to analyse the collected information and construct new concepts or understandings
C4	Able to critically evaluate information and integrate new concepts with prior knowledge
M1	Able to be aware that information processing it iterative, time-consuming and demands effort
M2	Able to plan and monitor the process of inquiry
M3	Able to reflect upon and regulate the process of inquiry
A1	Able to recognise that being an independent reader will contribute to personal enjoyment and lifelong learning
A2	Able to recognise that information processing skills and freedom of information access are pivotal to sustaining the development of a knowledge society
S1	Able to contribute positively to the learning community in knowledge building
S2	Able to understand and respect the ethical, legal, political and cultural contexts in which information is being used

The next stage of the study was to understand the perception of education practitioners towards the development of the IL framework and gain their support on its implementation based on the aforementioned key dimensions and their associated standards. The purpose was to adopt only those standards that were suitable for Hong Kong school students.

2. Region-wide Questionnaire for Primary and Secondary Education Practitioners

A total of 3,924 questionnaires were sent to all 1,308 primary and secondary schools in Hong Kong, in December 2004 to invite principals/curriculum coordinators, teachers responsible for coordinating IT across the curriculum and teacher librarians of each school as participants. These teachers were selected because it was believed that they were the key drivers of educational reform in the schools. The total number of completed questionnaires was 2,608.

This represented a response rate of 66.46% (Kong et al, 2005, July). The purpose of this questionnaire was to ask how education practitioners would rate the importance of indicators of the IL framework's standards.

Table 2
Demographic Data of the Region-wide Questionnaire Survey

Category		No. of Schools Invited	No. of Questionnaires Sent	No. of Questionnaires Replied	Response Rate (%)
Primary schools	Morning	153	459	309	67.32
	Afternoon	148	444	284	63.96
	Whole day	485	1455	996	68.45
	Total	786	2,358	1589	67.39
Secondary schools	Morning	14	42	4	9.52
	Afternoon	14	42	7	16.67
	Whole day	494	1,482	1,008	68.02
	Total	522	1,566	1,019	65.07
Total		1,308	3,924	2,608	66.46

3. Focus Group Discussions with Education Practitioners for In-Depth Feedback

The focus group discussions involved a total of 17 sessions that included: associations in education, education bodies; IT pilot primary and secondary schools; secondary and primary international schools; and expert panels on IL. These were conducted between November 2004 and February 2005. The duration for each session was 90 minutes which involved discussions between the participants and the Task Group.

Table 3
Demographic Data of Focus Group Discussions

Focus Group Category	No. of Focus Groups	No. of Participants
Associations in education	1	8
Education bodies	1	7
Secondary schools	5	22
Primary schools	4	7
IT pilot secondary schools in 1998	1	17
IT pilot primary schools in 1998	1	3
International schools	2	8
Expert panels on IL	2	30
Total	17	102

4. Public Consultations to Promote the Proposed Standards and Gain Further Feedback for Study Refinement

There were eight consultation sessions that took place in February 2005. Essentially, the sessions served two purposes. Firstly, to report on the IL framework development progress by the Task Group to an audience of primary and secondary education practitioners that also include the results obtained from the region-wide questionnaire survey and the focus group

discussions. Secondly, to gain more detailed indications of levels of concern with respect to the framework. This would provide a guide to expected levels of support for the implementation of the framework. Over 300 education practitioners attended those open sessions.

Results

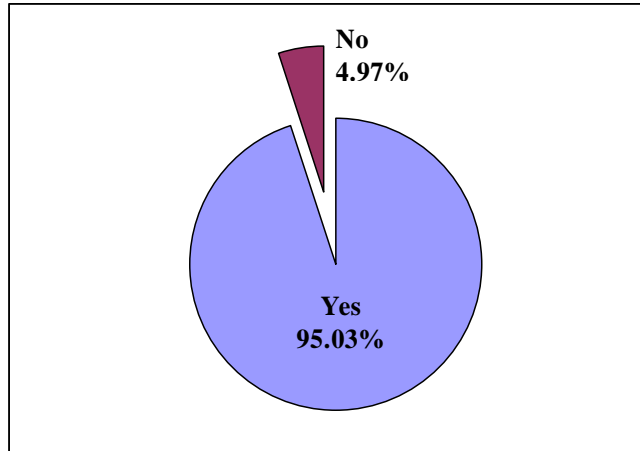*(a) Region-wide Questionnaire Survey*

Figure 1. Results on whether IL education is needed for students.

Over 95% of the respondents agreed that education for IL is required for Hong Kong students. What this highlights is that education practitioners identified the need for information literate education. Respondents were asked to rate the importance of *what students are expected to be able to achieve* (i.e. indicators) *when they graduate* by using a four-point scale. These indicators are the subsidiaries of standards that are proposed for the IL framework. The higher the average figure, the more importance the respondents attached to the indicator.

From the survey, 39% of participants considered the implementation of professional development in schools should be in 1 to 2 years and 30% considered 2 to 3 years. Participants noted the importance of implementing professional development in schools in the coming future. Figure 2 demonstrates the proportion from the survey by all participants on choosing the suitable time for implementation of professional development in schools.
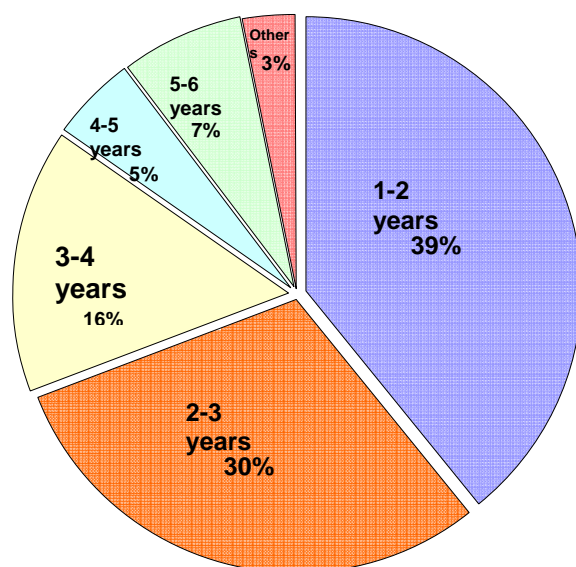
Figure 2. Proportion from the questionnaire survey by all participants on choosing the suitable time for implementation of professional development in schools.

Table 4

Top 10 Ratings from the Region-wide Questionnaire Survey by Primary School Practitioners on the Indicators Applicable to Primary Students – Cognitive (C), Meta-cognitive (M), Affective (A) and, Socio-cultural (S)

Code	IL indicators	Average (1-4)
A	Read for information and pleasure	3.36
M	Understand the information processing requires time, diligence and practice	3.33
A	Recognise and select materials appropriate to personal abilities and interests	3.32
S	Share knowledge and information with others	3.27
S	Understand and respect for the principle of intellectual freedom	3.27
S	Collaborate effectively in groups to pursue and construct knowledge	3.25
S	Understand and respect the principles of equitable access to information	3.24
M	Recognise the information seeking process is evolutionary and changes during the course of investigation	3.22
C	Apply information in problem-solving	3.22
A	Recognise that being an independent learner will contribute to lifelong learning	3.19

Table 5

Top 10 Ratings from the Region-wide Questionnaire Survey by Secondary School Practitioners on the Indicators Applicable to Secondary Students – Cognitive (C), Meta-cognitive (M), Affective (A) and, Socio-cultural (S)

Code	IL indicators	Average (1-4)
A	Recognise that being an independent learner will contribute to lifelong learning	3.49
A	Recognise and select materials appropriate to personal abilities and interests	3.45
C	Apply information in problem-solving	3.45
S	Understand and respect for the principle of intellectual freedom	3.45
A	Recognise that accurate and comprehensive information is the basis for intelligent decision-making	3.44
M	Understand the information processing requires time, diligence and practice	3.44
S	Understand and respect the principles of equitable access to information	3.41
A	Read for information and pleasure	3.40
S	Observe laws, institutional policies and social etiquette related to access and use information	3.40
S	Collaborate effectively in groups to pursue and construct knowledge	3.40

Primary schools practitioners considered their students need to "read for information and pleasure" as the most essential element as opposed to secondary school practitioners who valued the need to "recognize that being an independent learner will contribute to lifelong learning" on the same ranking. Although both the above mentioned indicators fall within the affective dimension as the number one importance, the differences between the opinions of primary and secondary practitioners can be demonstrated by the number 10 ranking, that primary students should "recognize that being an independent learner will contribute to lifelong learning". The affective domain is seen as growing in importance over the duration of schooling.

Secondary practitioners identified their students ability to "collaborate effectively in groups to pursue and construct knowledge" as the least important indicator.

In addition, the region-wide questionnaire considered the school-based implementation of IL framework. Three options were proposed for school implementation, namely:

- using existing IT/Library lesson as a coordinating subject;
- infusing IL in existing subject curriculum; and
- conducting project-based learning (PBL).

Those school practitioners who were involved with this question in particular include teacher librarians, teachers coordinating IT and principals/curriculum coordinators. They were asked to choose two of the above options that would be suitable for their own schools. The results in Figure 3 show there is a lack of consensus regarding a preferred option because of a relatively equal distribution of opinions which reflects the practitioners' uncertainty about the efficiency and effectiveness of each approach.
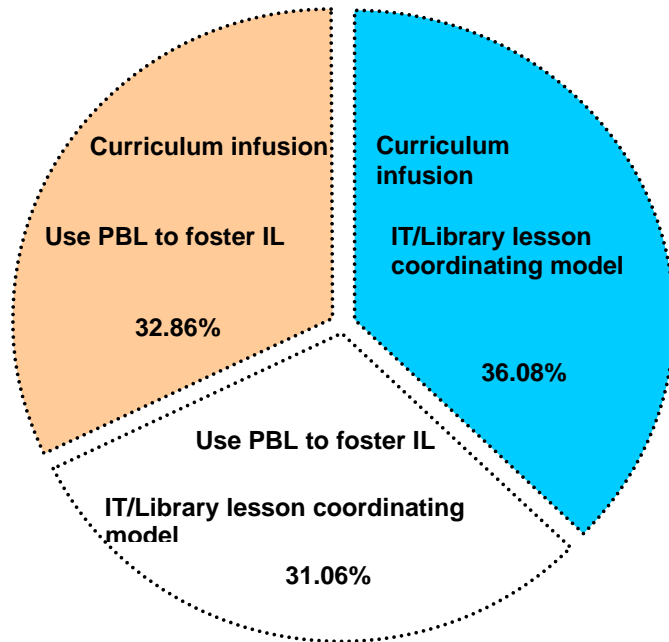
Figure 3. Proportion from the region-wide questionnaire by teacher librarians, teachers coordinating IT and principals/curriculum coordinators on choosing 2 out of 3 suitable options as the IL implementation models.

(b) Focus Group Discussions

Six main questions were asked:

- Is IL needed in Hong Kong for its future development?
- What are your opinions of IL on respect to knowledge, use information effectively and efficiently, and disseminate information ethically?
- What elements should be included in the IL framework for HK students?
- Why should IL standards be developed?
- How should IL standards be developed?
- What IL abilities would you consider the students need to possess by the time they graduate?

Generally, all participants agreed that IL is needed in Hong Kong, a result which supports the region-wide questionnaire survey of over 95% compliance. They believe that as Hong Kong is becoming a knowledge-based society, sufficient IL skills are required to compete in a global market which emphasizes high value-added industries:

> Information is flooding into a knowledge-based economy, so people need to know how to process information from various sources. (Participant 1)
> Have the ability to provide solutions to various problems. (Participant 2)
> IL is needed for the student to know how to learn from information rather than how to memorise information. (Participant 3)

The opinions of IL on respect to knowledge, most participants thought that there should be a balance between protecting intellectual property and equitable access to information. Using

information creatively is as important as using it effectively and efficiently. Ethical values are emphasized in the Chinese society when it comes to information dissemination:

> Teachers often feel embarrassed when quoting references or citations. (Participant 4)
> (Teachers) often value the end product and so plagiarism is indirectly encouraged. (Participant 5)
> Thinking outside the box is a better way to solve problems, to produce innovations. (Participant 6)
> Commitment and honesty are not new concepts in the Chinese society. (Participant 7)

The difference between IL and IT was a concern of the participants. They believe that there is a public misconception of IL being the equivalent of IT where one focuses on information processing skills whereas the other is on technological skills. This has implications on the elements that should be included in the IL framework:

> The term 'IL' may give the public a misconception that IL is specific to IT only. (Participant 8)
> IL involves using technology as a means for the information process, to develop the project learning abilities of students. (Participant 9)
> (IL) should not encourage students to duplicate information directly from sources. (Participant 10)

IL standards should be developed because most participants think that standards could tell the society on what to look for from children when they graduate from schools:

> The standards allow the society know what we are looking for in the IL of our children. (Participant 11)
> Provide informal guidelines for schools to develop their school-based curriculum. (Participant 12)
> Let teachers know how to teach IL. (Participant 13)

For the IL standards, most participants think that they should be realistic and feasible for implementation. All the standards, indicators and learning outcomes should be clear and precise:

> The standards and indicators should be the same for students in different educational levels while the learning outcomes should be different. (Participant 14)
> As clear as possible so that the school teachers can follow them easily. (Participant 15)
> Should not directly duplicate the American national standards. Ethical value is more emphasized in the Chinese culture. (Participant 16)

The expected abilities of students to possess by the time they graduate differs between primary and secondary graduates:

> Students (primary) should have the ability to use multi-media for project use. For example, the ability to take photos using a digital camera and upload the photos on to the computer. (Participant 17)
> Students (secondary) should have acquired the knowledge in computer literacy… and have confidence in project learning. (Participant 18)

(c) Public Consultation Sessions

Some participants raised concerns about the distinctiveness of the Hong Kong culture and the potential for incompatible with a framework that looked very similar to 'western models'. The question of information ethics was perhaps the most prominent issue raised in this discussion. Information behaviour that was seen as an infringement of copy rights in the 'west' was often not regarded as unethical in Hong Kong despite recent changes to the law resulting from China's membership of the WTO.

Some participants were concerned that the framework seemed to be potentially rigid and would likely result in the creation of 'league tables'. Participants argued that the focus should

be on the individual student improvement with respect to IL rather than a comparison of IL abilities between students.

The focus of the public consultation was about the study rather than about implementation, nevertheless many teachers wanted to talk about implementation issues.

One of the many concerns was the teacher assessment of IL. Just how was IL to be assessed? Would exemplars be provided or would individual schools have to work out ways to assess IL? If IL were to be infused across the curriculum then every teacher would be under pressure not only to ensure that standards were met but the process would require teacher collaboration which was identified as time consuming.

What support would teachers be given? Would detailed and ongoing professional development be made available? Would it be compulsory? Would it be school based? There was a fear that the cost of effective professional development would be prohibitive and that it would be given 'lip service' only.

A major issue raised was the domination of examinations as a means of assessment. This was particularly important with respect to the major examinations that were administered by the Hong Kong Examinations and Assessment Authority (HKEAA). It was argued that the reform agenda from the EMB with its emphasis on 'learning to learn' was indeed incompatible with the examination driven culture managed by the HKEAA and unless that issue was addressed and the relationship between the EMB and the HKEAA addressed major reforms such as the adoption of the IL framework was bound to be a case of 'good on paper but a failure in practice'.

Conclusion

Over 95% of the respondents agreed that IL education is needed. This was a staggering response and clearly marks the extreme importance of IL and its implications towards a more competitive society in an emerging knowledge-based economy such as Hong Kong. Although this is the case, there are diverse opinions between education practitioners over the IL framework development and its implementation into the education system. Concerns were raised at the consultation sessions as to how the framework should be implemented.

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