

# INFORMATION LITERACY AND INFORMATION EDUCATION AT UNIVERSITIES

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## *Abstract*

The paper deals with problems of information literacy, while its theoretical part is concerned to education in information science and technology systems and the practical one is closely related to implementation of activities within selected university, which concern to utilization of machine readable information resources. However, we have applied a questioner method in order to investigate opinions of users related to satisfaction with education activities of selected academic library as well.

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## *Keywords:*

information education  
information literacy  
digital literacy  
information science and technology systems

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## 1 Introduction

Text. The latest ten years have shown a need to work with information as best as possible. However, this aspect has been always stressed and became a natural implicit and explicit education goal as well. (Zápotočná, 2012, p. 25). The capability to work with computer and information technology systems became one of the most significant areas related to general intelligence and literacy, while the terms information and computer intelligence became most frequently applied literacy terms and the terms digital, technological and internet intelligence and literacy enriched that term set in a great deal too.

At present, the general intelligence and literacy plays a role of important or decisive importance in a human life and a set of appropriate requirements related to information technology system becomes greater and greater, more and more differentiated and a lot of qualitative changes are observed there as well.

Student's functions in the education have changed in the direction of greater openness to technical innovation, and the student at the secondary education stage receives them as a commonplace and with obligingness. Modern teaching techniques, and especially computers, create a richer sensory space for receiving and processing information by students. In the process of pedagogical interaction and communication, the technology is increasingly taking place of a mediator between the teacher and the student, but it should never replace human contact and weaken social bonds (Hrušková, 2012, p. 192 ).

The fact, we are listening more and more about need of education in information technology systems is closely related to those system developments alone. The technical and technological growth of information technology systems applied in teaching and learning process creates an integral part of many learning activities with a high didactic value, which support the student's interest and activities related to their further education and development. On the other hand, the teacher alone and the school equipment by adequate IT systems determine a didactic efficiency of modern information technology systems. A contribution of IT systems encourages the teacher to change his/her teaching and learning approach and to apply them in looking for new methods and organization forms of learning and teaching (Vaničková et. al., 2014, p. 80 by Dostál, 2011). A set

of changes achieved within IT areas are considered to be stronger and greater, than the changes in information media achieved in the history of humanity Sak (2007, p. 22).

However, a work with the text semantic contents plays role of principal importance as well.

We live in the age of information presented to the user in different forms and via various approaches, methods and techniques. However, the information may be presented in different forms, as well. There may be applied text, static or dynamic image, sonic or multimedia documents. On the other hand, those types of information may be combined and applied within one machine readable record or document (Stašák, 2011).

/Modern media technology, most notably represented by computers, multimedia systems and the Internet, occupy an increasingly important place in the instrumentarium of the teacher's educational methods. It is therefore essential that the modern school teacher is able to handle these resources and incorporate them thoughtfully into other strategies, methods, techniques and resources. In the process of pedagogical interaction and communication, the technology is increasingly playing a role of a mediator between the teacher and the student Hrušková (2012, p.198)

At present, a literate person has many advantages, when the information society exist and only the citizens, however the firms, companies and institutions who provide education and training services are aware of that fact as well. As a result of that, different forms of education in information science and technology create an integral part of courses taught at universities, while existing trends are being respected a lot in there. On one hand, the university libraries provide services for university students and teachers; however they provide labor opportunities for IT experts too.

The IT experts or the librarians equipped with IT skills that provide library and IT services for university students and teachers play a role of principle importance in their IT literacy development. It means, they provide consulting services within retrieval and material preparation, while they are working with daily newspaper materials, reference to other information resources up adequate web sites and web pages as well Zápotočná (2012, p. 32-33, according to Eastman, McGrath, 2006, Abilock, 2006).

Most of public libraries in the Czech republic provide IT education services, as postulated in actual research results, while those services and activities have a tradition since seventies of the 20<sup>th</sup> century. The paper's part, which deals with practical aspects of IT education, is closely related to mapping of impact concerned to educational activities provided within University of South-Bohemia, utilization of machine readable information resources and content investigation as for educational activities of the academic library as well.

## 2 Information Literacy

There are more definitions and explanation of the Information Literacy term, while the first of them was postulated by 1974 Paul Zurkowski in 1974. He considered, the man or woman to be equipped with adequate IT literacy, when he/she is able to utilize information resources when looking for solution their problems in his/her working activities and he/she was able to learn a wide scale of IT techniques and tools and the primary information resources as well Landová (2002). On the other hand, the Information Literacy definition postulated by Presidential Committee on Information Literacy<sup>\*</sup>, which might be postulated as follows: "The people equipped with IT literacy are able to find a way how to learn and to study". They know how to learn and to study, because they are able to search, to find and to utilize information so that the other people are able to learn with the use of them. Those groups of people are being prepared to accept a lifelong education needs, because they are able to find that set of information, which is necessary for making an appropriate decision or finding solution of any pre-defined problem (Dombrovská, Landová, Tichá, 2004).

However, there are further definitions of Information Literacy term as well, while several differences might be among them and all of them are based on the idea, that the only primary literacy (reading, writing and counting capability) is not sufficient for any modern man or woman. He/she has to be able to find a right way or direction within huge information and information resource set and this aim is not reachable without information technology knowledge. It means, anybody of us has to know the procedure of information acquisition and subsequent processing in order to utilize them for his/her own needs.

## 2.1 Information and communication technology systems versus digital technology systems

When considering education context, the information and communication technology systems might be discussed with respect two directions. On one hand, those systems can be considered to be information medium and on the other hand the technology systems may play a role of the constructive one. It means, the information and communication technology systems (hereinafter known as IKT systems) are considered to be a huge set of means and facilities, procedures and knowledge applied for information processing and communication purposes. However, these considerations are closely related to education context as well (Kalaš, 2011, p. 131).

When considering specialized areas of education related to information and communication technology systems, we have to think about computing and communication means and facilities, different procedures and information resources, which play a role of supporting tools for teaching and learning together with a set of cognitional processes and further learning and teaching activities. However, all the educational process has two complementary sides (Papert, 1999): informative, which is concerned to acquisition of information and skills and inference, which is concerned to new knowledge discovery and generation. In spite of that, both of the above-mentioned sides play a role of the same importance, the inference side is undervalued in a many cases. Therefore more and more authors are talking about digital technology systems instead of information and communication technology systems in order to stress a need of equilibrium between information and inference aspects, when involving them into learning and teaching activities Kalaš (2011, p.15).

The IKT system competences are being understood as the competences needed for an appropriate productive and secure utilization of digital technologies, which play a role of significant supporting tool for learning and teaching activities and activities related to new knowledge discovery. With respect to the above-mentioned issues, we may recommend to use the term digital literacy. The term of *digital literacy* is being explained and interpreted as set of theoretical knowledge and practical skills needed for an appropriate, safety and production utilization of digital technologies for providing of learning and teaching and everyday life activities (Kalaš, 2011, p. 130).

The above-mentioned capabilities might be classified as follows:

- A meaningful utilization of different digital tools for our own needs, cognitive purposes, self-representation and the complex personal development.
- An efficient solution of problems and tasks with the use of digital technology systems
- A qualified selection and utilization of a suitable digital technology in order to find a set of required information and apply it for creative and further development purposes, for making critical evaluation and analysis of information gained based on retrieval related to adequate digital information resources as well.

## 3 Education in information science and technology systems

A need of education and literacy in information science and technology systems within university libraries in the Czech republic represents a long-term discussed and developed topics. A lot of appropriate theoretical and conceptual documents are being created, which deal with problems of education in information and communication technology systems. On one hand, there are organized conferences and seminars concerned to that type of education as whole or selected aspects. On the other hand, adequate projects exist, the aim of which is an information literacy improvement of university students in the Czech republic (Landová, Cívínová, 2011).

When considering information science and technology and library science, the information technology education represents a complex process related to acquisition of knowledge and skills in disciplines, which deal with information collection, processing, storage and delivery (Planková, 2003).

Our environment is changing very quickly and rapidly and huge sets of information are being created, while and orientation in those sets becomes more and more complicated. As a result of that, a need of information resource utilization together with appropriate knowledge and skills in information retrieval and evaluation for

different everyday situations becomes more and more important. However, a need to respect copyright information ethic principles plays a role of great importance as well. (Association of university libraries in the Czech republic, 2008).

The universities represent very significant initiators within information technology education in the Czech republic, where university libraries also play a role of mediators among students and information technology education systems. (Association of university libraries in the Czech republic, 2008).

#### 4 The Content Research related to Academic Library Services

The content research related to academic library services has been done in November 2013, while the object to be investigated was University of South Bohemia in České Budějovice -Academic Library (hereinafter known as Academic Library of USB). The research has been done within subject denoted as Education Management of Supplementary Pedagogic Studies at VŠTE (Vorlová, 2014).

##### The research aim

The research aim was to judge opinions related to Academic Library of USB users concerned to information and technology education activities.

##### The research subject

The research subject was concerned to offer and utilization of machine readable information resources and the library educational activities.

##### Research sample

A number of research participants was 2671, where 2264 respondents were students, 271 respondents were university teachers and Academic library employees, 78 respondents were other USB<sup>†</sup> employees and 134 respondents represented a public community.

##### Research result summary

There are postulated partial research results.

##### Machine readable information resources

A set of respondent opinions related to utilization of machine readable information resources are being postulated in Table 1. Those indicate that the students who created the main group of respondents prefer utilization of accessible machine readable resources within their studying. Several comments created by respondents contained information related to databases or on line magazines that they are missing.

Utilization of machine readable information resources		
Variant	Absolute frequency	Relative frequency
I use them	1080	40,43 %
I don't use and I don't need them	560	20,97 %
I am no table to work with them	520	19,47 %
I have bo idea about their existence	300	11,23 %
I don't use them because of other reasons	121	4,53 %
I have no accesses to these resources, I need	90	3,37 %
<b>Number of responds (total)</b>	<b>2671</b>	<b>100 %</b>

**Table 1** Utilization of machine readable information resources

### Education activities within Information Science and Technology Systems

A set of respondent opinions related to educational activities information science and technology systems provided by academic library are being postulated in Table 1

Education activities within Information Science and Technology Systems		
Variant	Absolute frequency	Relative frequency
Acquisition of documents from libraries in the Czech republic and from abroad	915	34,26 %
Work with machine readable information resources	620	23,21 %
Diploma thesis (retrieval of information resources, citations)	600	22,46 %
Citation and publishing analysis (impact factor, h-index etc..)	239	8,95 %
Academic library services	153	5,73 %
Retrieval of the library on line catalogue	110	4,12 %
No ones	25	0,94 %
Others	9	0,34 %
<b>Number of responds (total)</b>	<b>2671</b>	<b>100 %</b>

**Table 2** Interest of respondents related to educational activities information science and technology systems provided by academic library

The above-mentioned research results indicate that the user prefer acquisition of documents from libraries in the Czech republic and libraries from abroad and working with machine readable information resources, databases especially. However, there are small numbers of respondents who do not use any possibilities of education in information science and technology systems.

### Discussion

When looking at Table 1, we can see that 40, 43 percent (it means 1080 from 2671 respondents) utilize machine readable information resources. "I am not able to work with machine readable information resources" was an answer of 520 (20 percent) respondents. On the other hand, only 3, 37 percent (90) of respondents postulated the fact, they do not have access to information, what they need.

When looking at Table 2, we can see that 34, 26 percent (it means 915 from 2671 respondents) prefer acquisition of documents from libraries in the Czech republic and libraries from abroad, while 23, 21 percent of respondents prefer working with machine readable information resources (databases). See Table 2 for more details.

### Conclusion

The research subject was closely related to offer and utilization of machine readable information resources and education services provided by academic library. The research has been done with the use of machine readable questionnaires', while the respondents received e-mail message before getting started filling the questionnaire with the use of an appropriate application program VypInto. The research results might be considered to be an inspiration propagation improvement related to information science and technology systems and preparing courses in these branches for under graduated and graduated students.

## Final statement

It is necessary to extend offer in information science and technology education services offered by academic libraries and other educational institutions in order to achieve the higher level of information science and technology literacy. Anybody who wants to develop his/her theoretical knowledge and practical skills in his/her branch of specialization has to learn working with machine readable information resources and databases. This is the only one way how to achieve access at work and in a private life.

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