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Ane Landøy
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Collaboration in Designing a Pedagogical Approach in Information Literacy



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Collaboration in Designing a Pedagogical Approach in Information Literacy

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Introduction

Information literacy, “(...) the ability to think critically and make balanced judgements about any information we find and use. (...)” (CILIP 2018), is an important skill set for academia in the twenty-first century. Over the years since its first inception, it has become a key competence for academic librarians to offer to students, but without necessarily being a key concept in library and information science education.

In this book, the authors draw on research and empirical knowledge from their work in libraries and their pedagogical practice from academia, to share tips and tricks for the development of good information literacy teaching and training in libraries, both academic and public. The main audience for the book is academic librarians, but also staff from public libraries who deals with university students will benefit from the pedagogical approach.

This book aims to summarize all the main elements that need to be available when information literacy is taught. It will be ideal as literature for courses about information seeking/searching, evaluation of information and the management of it, and also for courses with a wider aim, e.g. information behaviour.

This book gives a research background on information literacy as a phenomenon in higher education in parts of Europe and provides support for librarians and pedagogues working in this field.

Throughout the book, the concepts connected to information literacy will be explained, and pedagogical issues pertaining to information literacy will be discussed with a view to supporting the practitioner.

Each of the chapters takes into consideration one aspect of information literacy, the pedagogical challenges and suggestions for best practice.

Reference

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Background and Earlier Research

1

Abstract

After completing this chapter, you will be able to:

- Identify conceptual delimitations;
- Distinguish earlier research in Europe;
- Understand the history of cooperation.

Keywords

Information literacy • Norway • Romania • Moldova

What does research say about how user experience shapes development of information literacy teaching programmes in academic libraries?

In the chapter, “Background and Earlier Research”, contains examples of the authors’ research over the last 15 years on user experiences in libraries. The authors have participated in research and development work in several countries, and from this background, they offer evidence-based contributions to library pedagogy on information literacy.

Paul G. Zurkowski coined the term “information literacy” in 1974. He was concerned that workers needed to develop skills to help them solve workplace problems (Zurkowski 1974a, b).

As president of the Information Industry Association, he wrote a report to the National Commission on Libraries and Information Science (“The Information Service Environment Relationships and Priorities. Related Paper No. 5”; www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/36/a8/87.pdf):

Information is not knowledge; it is concepts or ideas that enter a person’s field of perception, that are evaluated and assimilated reinforcing or changing the individual’s concept of reality and/or ability to act. As beauty is in the eye of the beholder, so information is in the mind of the user.

To make his concept of information clear, Zurkowski wrote:

People trained in applying information resources to their work can be called information literates. They have learned techniques and skills for utilising a wide range of information tools as well as primary sources in molding information solutions to their problems. (Zurkowski 1974a, b)

Librarians then took up the term information literacy and translated it into library-related information search skills.

In libraries, “information literacy was first understood as ‘systematic research’ skills and, more specifically, ‘library-based research’; the term was initially used in connection with bibliographic instruction. Later in the 1970s, information literacy came to mean, more generally, the techniques and skills needed for identifying, locating and accessing information resources by using information tools in a variety of contexts, including workplace contexts. In the 1990s, information literacy became more widely understood as a concept. This is because it became associated with computer literacy and the ability to use the Internet. Information literacy came to be understood as a key skill of the Information Age” (Lloyd and Talja 2010).

Although there has always been a need to find, evaluate, and effectively use information, the abilities needed to do so have just grown larger, more complex, and more important in the information and communication technology (ICT) environment. There is also a shift towards broader contexts, and to connect information literacy with an active, effective and responsible citizenship (Virkus 2003).

From the 1970s, there have been many different definitions of information literacy. The latest definition of “Information Literacy”, in the new definition from the Chartered Institute of Library Information Professionals (CILIP) is “(...) the ability to think critically and make balanced judgements about any information that we find and use. It empowers us as citizens to reach and express informed views and to engage fully with society” (CILIP 2018).

In this chapter, we will first give some examples of earlier research, mainly concentrated on research and theoretical work done in Europe, where we, ourselves, are situated. Thereafter, we will look specifically at the authors’ research, as a background for developing good practice for teaching and training information literacy in our institutions. Also, this will form the background for suggestions on best pedagogical practice. We agree with Løkse et al. (2017) in that “The underlying aim of all IL teaching is to enhance learning in some way or another” (p: 15).

We will showcase a few important meeting places for practitioners and researchers, in the form of conferences, and give some examples of multi-national development projects of which we have been part.

There is Abundant Research Literature on Information Literacy

In Europe, Information Literacy has been a field for theoretical conceptual development and research since the 1980s, alongside practical development in libraries (Virkus 2003).

One example among several, is that of Norwegian scholars, Audunson and Nordlie (2003) who highlight three main categories of information literacy: technical capabilities or what may be called computer literacy; intellectual capabilities related to traditional literacy; and communicative competency. They consider information as the sum of different ‘literacies’.

Virkus (2003) also shows how, in Nordic countries, terms used for information literacy clearly refer to competencies. For example, in Denmark the term, *informationskompetence*, in Finland, *informaatiokompetenssi* (also *informaatiolukutaito*), in Germany, *informationskompetenz*, in Norway, *informasjonskompetanse*, and in Sweden, *informationskompetens*, are used as the English term “information literacy”. Here, the definition and understanding of the concept seems to be related to the way in which the concepts of competence and skills are defined and perceived.

“Academic libraries have played an important role in information literacy developments in Europe. Information literacy initiatives in higher education have taken a variety of forms: stand-alone courses or classes, Web-based tutorials, course-related instruction, or course-integrated instruction” (Virkus 2003). Also, in the early 2000s, the academic sector not only had to cope with the growth of ICT, but also the implementation of the Bologna process, the rise in lifelong learning and widening of access to higher education bringing in new learners with different prior educational experiences.

Hyldegård et al. (2011) sums up the research situation by explaining that a variety of theoretical and methodical approaches are used. Much of the research looks at information needs, the information search process and the use of information. Research results have become more nuanced through the inclusion of new topics, for example personality is increasingly important along with other contributing factors. Likewise, information behaviour in collective and collaborative contexts has also become more important. Increasingly, information behaviour is seen and analysed in relation to context and how this is interpreted in a given situation.

Pedagogical collaborations within the field of information literacy has mainly been studied in the US, with a good example found in the book “Information Literacy Collaborations that Work”, edited by Mackey and Jacobson from 2007. The editors, from University at Albany, regard information literacy as an educational issue that needs ongoing collaborations between academic staff and librarians. In this book, each chapter shares some story of collaboration between a librarian and other university staff or students, in an effort to develop better information literacy trainings. The book has three parts: “Higher Education and Information Literacy Collaborations: Fostering Connections in the Undergraduate Programs and Graduate Education”, “The Disciplines and Information Literacy Collaboration: Building Partnerships with the Humanities, Social Sciences, and Sciences” and “Technology and Information Literacy Collaboration: Creating Links through the Web, Video, Wireless and Blogging”.

However interesting the case studies and practical examples may be, the book is too closely related to the US academic scenario to be fully serviceable for European academic libraries, and it does not have a special pedagogical focus.

The Journal for Information Literacy, published by CILIP (the Chartered Institute of Library and Information Professionals) in UK, is a major contributor to knowledge on information literacy research. In volume 13, no. 1, there is an interesting paper from our point of view: Stebbing et al.: “What academics really think about information literacy.” From the literature review, they found that there were two different approaches taken by library staff—either teaching information literacy within the subject discipline, or specifically taught as a generic set of skills (Stebbing et al. 2019: 24).

The findings of Stebbings et al. confirm other research and our own experiences: Academics see information literacy through their discipline lens, expressed in the discipline’s own language, and thus connected to the pedagogical approach of the academic discipline.

However, Hyldegård et al. (2011) reminds us: Students cannot be considered as a single group. Information behaviour depends on level of study, subject, libraries’ dissemination, interpretations of what is needed in relation to a given situation, and preferences and different types of learning styles and personality traits, to mention some of the factors pertaining in this context. Information search does not only play a major role in the consciousness of students, but also gains more importance the longer that one studies. In general, students are happy with the tools and aids that libraries make available, but research also indicates that their knowledge is generally overlooked and that their extensive use should not be too cumbersome. The students’ use depends primarily on the requirements of the teachers at their educational institution.

Practitioners and Researchers Meet

Information Literacy has become an important field of research and practice in libraries, and IFLA, the International Federation of Library Associations, has a separate Standing Committee for Information Literacy. In the annual World Library and Information Conferences this committee arranges open sessions, and also a pre-and/or post-conference satellite meeting. Anyone who is interested in the development of Information Literacy in libraries should take a look at the proceedings of this Standing Committee.

There are several other European conferences with IL in libraries as an important topic, and we will present some of them in what follows:

ECIL (The European Conference of Information Literacy) aims to bring together researchers, information professionals, employers, media specialists, educators, policy makers and all other related parties from around the world to exchange knowledge and experience and discuss recent developments and current challenges in both theory and practice (ECIL 2018 website). Since the beginning, proceedings have been published by Springer, in the “Communications in Computer and Information Science” book series.

LILAC is organised by CILIP's Information Literacy Group. The LILAC committee is made up of a team of information professionals from all areas of library and information work, who are dedicated to improving information literacy. LILAC is a great opportunity for our fellow professionals to present their ideas, share best practice and show case new thinking in our sector (Lilac 2019 website).

The Creating Knowledge Conference: This conference focuses on higher education and information literacy. The conference programme is broad and varied with engaging presentations, workshops and discussions on a wide range of information literacy topics.

The conference is primarily targeted at librarians, researchers, information officers, IT-strategists and engineers, architects, education and library planners, and students. (CK1999 website) Creating Knowledge conferences provide an excellent opportunity to expand cooperation and to develop joint strategies for information literacy that are viable for the future (CK2016).

A Romanian conference on Information Literacy has been organised since 2010 in Sibiu, Romania by the "Lucian Blaga" University Library in Sibiu.

The Western Balkan Information and Media Literacy Conference has been organised since 2013 in Bihac, Bosnia-Herzegovina. It is supported by, inspired by, and dedicated to the work and achievements of the European Union Capacity Building in the Field of Higher Education (CBHE) project 561987 Library Network Support Services (LNSS): modernising libraries in Western Balkan countries through staff development and reforming library services. This is a unique, pioneering European Union funded project, which aims to reinforce and modernise libraries and to improve library staff competency and skills in Western Balkan countries to develop innovative libraries as a support to education and lifelong learning.

CBHE is an European Union programme that aims to support the modernisation, accessibility, and internationalisation of higher education in Partner Countries in regions such as Eastern Europe, Central Asia, the Western Balkans and the Mediterranean mainly through university cooperation projects.

As a result of the involvement of leading international experts in the IL field in WBIMLC, the concept of Information Literacy, which prior to WBIMLC was almost completely unknown in the Western Balkan region, has firmly taken hold and is now embedded in many universities in the Region.

WBIMLC celebrates the clear enthusiasm and passion of IL enthusiasts not only in the Western Balkans but also at an international level. The proceedings are found in open access from wbimlc.org.

Norway and Romania

Our own interest in students' perception of and attitude to library services started in 2007, when we conducted a survey on Norwegian and Romanian student attitudes. We found that one of the areas in which students in both nations needed better services was within the field of information literacy (IL).

To support our understandings of students' acts and attitudes with regard to library usage, short and similar questionnaires were handed out to students in both nations in the Autumn term 2007 and in the Spring term 2008. There were 93 respondents in Bergen and 100 in Brasov. The questionnaires had been developed in Romanian, translated into English and then into Norwegian. The study was designed to explore students' conduct and understandings as regards the use of libraries, especially the university library, and the electronic resources provided (Repanovici and Landoy 2014).

One result from the survey was that students both in Bergen and Brasov preferred the Internet as an information source, and access from home. At the same time, we found that they were not knowledgeable about evaluation of electronic information resources, notions of ethics, plagiarism, and communication of the results in scientific research. This was, therefore, taken into consideration when planning information literacy trainings (Repanovici and Landoy 2014).

We also took care to evaluate the courses as they were developed and given. Post-training evaluations from the students were compared, and used as basis for further development of training.

"Students find these courses useful and relevant. In evaluations, they give high marks for relevance, and they also comment upon this when asked either in writing or orally. When asked what they find relevant, the answers cover both the practical tools for finding information (databases, journals, other resources), as well as the new knowledge in searching and evaluating information. Flattering enough for the library and the actual librarian, students also give the library high marks for performance, and for the conception of the course." (Repanovici and Landoy 2007).

We also discovered that students would regard the course as more relevant if it included actual tasks as a starting point, and that it would be offered exactly when they needed it. Keeping the students' concerns about their use of time in mind when planning, could mean that we used different search examples for different groups of students. We were told, by professors and university teaching staff, that their students had learned new information literacy skills. They were also set free from using tutorial time to show students how to evaluate information and how to cite. The university teaching departments kept asking for courses for more student groups at more levels (Repanovici and Landoy 2007).

Information literacy is about dealing with information overload—how to choose and decide what is useful and trustworthy. Hence, the focus of information literacy training was different in Bergen, which had a large number of electronic information resources in 2007, than in Brasov, which had much fewer electronic resources.

Our latest research in students' attitudes is given as follows.

In 2016, we conducted a web-survey with Survey Monkey among Transylvania University of Brasov engineering students, and interviews in Bergen. In Brasov, there were 105 respondents: 27% male, 73% female; 39% in their first year and 43% in their 4th year. The students' ages were 18–21: 38%, 22–23: 50%, and over 24: 12%.

In Bergen, there were 12 students interviewed: five males, and seven females. Three at bachelor level, and nine at master’s. They were all users of the library. Eight were from the Faculty of humanities, one from law, three from social sciences, and they were invited to have a coffee and an interview (Landoy and Repanovici 2016).

We were looking for what the students saw as new and interesting trends in academic libraries. In the survey, suggestions were formulated in the questions, but in the interviews, there were no pre-formulated suggestions (Landoy and Repanovici 2016).

Brasov students wanted the library/learning centre to provide connection to power and Internet (93 of 105 students replied that this was most important). The second most important was “boards, or video projectors connected to laptops for presentations” (73 students agreed to this), and third “furniture—tables and chairs—that can be moved”. The least important of the choices that were given was “mobile walls to create various private spaces for individual or team study”.

In Bergen, Internet and power was not mentioned by any of the students, probably because it is seen as given. All 12 students would use “boards, or video projectors connected to laptops for presentations” and half would use “furniture—tables and chairs—that can be moved” and “mobile walls to create various private spaces for individual or team study (Landoy and Repanovici 2016).

If the library was called “Centre for Technological Transfer”, the Romanian students saw “copy and printing devices and scanners” as the most important feature, closely followed by “workshops on various topics of interest” and “borrowing laptops and multi-media technology”. “Gaming space” was least important (Fig. 1.1 Facilities provided by Centre for Technological Transfer).

In Bergen, a library/learning centre would be a more interesting place than a centre for technology transfer, according to the students that were interviewed. All 12 would be interested in relevant books, journals, media, and databases (both printed and electronic) and nine mentioned study spaces in different kinds of zones (more or less quiet; with or without a computer). Eight found accommodating and knowledgeable library staff to be important (Landoy and Repanovici 2016).

Our Bergen and Brasov students are traditional and don’t have a lot of imagination when it comes to suggestions for new services, but are enthusiastic when we

3. Which of the following facilities should be provided by the Centre for Technological Transfer on a scale from 1 to 5, where 1 - least important, 5 - most important?

Answer Options	1	2	3	4	5	Rating Average	Response Count
An area with 3D printers, supplies and related software	2	1	20	32	49	4.20	104
Gaming space - Lego, chess for stimulating creativity	7	17	34	29	17	3.31	104
Copy and printing devices, scanners	0	2	8	26	69	4.54	105
Laptops and mass-media technology for borrow (photo)	0	5	12	30	58	4.34	105
Online documentation regarding the use of the	0	4	29	35	35	3.98	103
Online documentation for downloading and using the	1	4	15	28	55	4.28	103
Online communication with a specialized support IT	1	7	12	38	46	4.16	104
Training courses for using the various technologies	0	3	15	37	50	4.28	105
Exhibitions of new products by different companies	2	6	19	32	46	4.09	105
Workshops on various topics of interest	0	4	13	26	62	4.39	105
Others							2
						answered question	105
						skipped question	0

Fig. 1.1 Facilities provided by Centre for Technological Transfer

suggest something. There are clear differences in what they prefer, and we suspect that the differences originate in different services already existing in the two libraries, although it may also be subject dependant.

International Development Projects

Our common interest in information literacy in academic libraries also led us to reach out internationally, and apply for funding to support the development of IL in academic libraries in the Republic of Moldova, and in the Western Balkans.

In the Republic of Moldova, we joined forces with the Academy of Economic Sciences (ASEM) in Chisinau. First, we trained the ASEM librarians, and then we developed a new project, where we targeted all academic libraries in the republic. In this project, the libraries were supported to provide IL training for their students, as well as Open Access and bibliometric services.

Transylvania University of Brasov was head of a TEMPUS project: “Developing information literacy for lifelong learning and a knowledge economy in Western Balkan countries, 2010–2013”. In this project, IL programmes for lifelong learning and their use in curricula were developed, including innovative online IL modules for lifelong learning and harmonisation of IL programmes with those currently active in Western Balkan countries. The project aimed at strengthening the capacity of higher education institutions in the Western Balkans for strategic planning and implementation of IL programmes to instil transferable skills for a competitive, dynamic, knowledge-based economy.

<http://www.lit.ie/projects/tempus/default.aspx>.

Transylvania University of Brasov also participated in two Erasmus+ CBHE Projects: (561633) “Library Network Support Services (LNSS): modernising libraries in Armenia, Moldova and Belarus through library staff development and reforming library services” 2015–2018.

<https://lnss-projects.eu/amb/curriculum/module-7-access-to-libraries-and-society-for-learners-with-special-needs/> and (Erasmus+ CBHE Project 561987) “Library Network Support Services (LNSS): modernising libraries in Western Balkans through library staff development and reforming library services” 2015–2018

<https://lnss-projects.eu/bal/module-7-access-to-libraries-and-society-for-learners-with-special-needs-disabilities/>.

In the two ERASMUS+ projects, one of the modules for staff development is enhancing librarian’s development in teaching Information Literacy.

In Summary

The collaboration of our libraries for the development of information literacy and other issues, as shown in this chapter, has been beneficial for students and academics at our universities and in the projects in which we have participated.

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Contemporary Perspectives on Teaching

2

Abstract

After completing this learning unit, you will be able to:

- Identify contemporary perspectives on teaching;
- Analyse pedagogical principles;
- Argue the need to adapt teaching to new generations.

Keywords

Efficient teaching · Pedagogical principles · Curricular adaptation

2.1 The Need to Adapt Teaching to Student Characteristics

Scientific literature emphasises that “the impact of the global shift towards information- and technology-driven economies and the digital revolution demanding unprecedented shifts in education and learning systems” (Griffin et al. 2018). From the most elementary levels, such as preschool education, there is a need to conceptualise education from the perspective of lifelong learning, continuing to higher levels (primary, secondary and tertiary).

The professional environment for which younger generations of today are prepared is much more competitive and mobile than in the past. Many professions disappear with daunting speed, under the pressure of new technologies, which take the place of previous production methods. Consequently, the competency profile of the contemporary graduate includes the ability to adapt to a world in an accelerated transformation.

The training competencies that define contemporary concerns are broadly outlined with the perspective “to know, to do, to be, and to live together” (Delors et al. 1996). In a narrower sense, although respecting global vision, transferable competences are required, identified as: digital literacy, problem—solving, critical and innovative thinking, inter-personal skills, intra-personal skills, and global citizenship (UNESCO 2015; Griffin et al. 2018).

This different perspective implies changes in the conceptualisation of teaching and learning, both as a process and as a result. Individual responsibility for social and professional development requires an open view of learning as an unending process, so that possession of skills such as *information literacy* becomes absolutely necessary, if not imperative.

The Association of College and Research Libraries defines information literacy as “a set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning” (Association of College and Research Libraries 2015).

Other features of contemporary society, such as the availability and abundance of information, outweigh the teacher’s ability to share them and the libraries to contain them. In this flood of information, there is some that is not the most accurate and appropriate for the subject of interest. In order to make informed choices and to intelligently inform oneself, the individual needs a high level of *information literacy skills*.

However, it is not always easy to pass on to young generations the need for caution in the choice of information, the critical evaluation of both the source and the information, the rigours of the use of information and, above all, the explanation and appropriation of the essence and rationale of being *information literacy skilled*. Today’s societal characteristics require education to build authentic learning contexts and connect social, economic and cultural realities that guide the student into acquiring skills.

We consider learning to be “any process that, in living organisms, leads to permanent changes in competency and is not only due to biological maturing or aging” (Illeris 2007, p. 3). We adhere to this definition precisely because of the open and wide vision that it proposes and that allows the inclusion of innovative contributions. The existentialist perspective on learning, presented in the works of Peter Jarvis and Robert Kegan, the vision of pragmatism (Yrjo Engestrom and Bente Elkjaer), the transformation learning theory (Jack Mezirow), the theory of multiple intelligences (Howard Gardner), the cultural and psychological approach (Jerome Bruner), and the social learning theory (Etienne Wenger, Lave Jean) are some examples of contemporary learning theories with wide applicability in several fields, not only limited to school learning, that influence how we define the contemporary learning process.

Constructivist and post-constructivist perspectives on learning put the transfer of knowledge and skills from teacher to student in a secondary place, emphasising the active role of the student in their own development of knowledge and skills. We are referring to a new perspective, which places *learning as a process of co-*

participation. The new vision of learning (Situated learning) has generated a large amount of research in social sciences, which explores the situational character of human understanding and communication (Popa 2013).

This research has as its primary concern the *relationship between learning and the social situations in which it occurs*. Recent specialty studies prove that cooperative learning is an important component of achieving school success (Eslamian et al. 2012; Nicolini 2009, 2011). Thus, *learning* is not an individual process, but a *collaborative production*. This change in the focus of researchers has interesting consequences, generating a wide range of interdisciplinary issues. In this perspective, the role of competences acquired through learning processes is highly productive and interactive, the individual acquiring competence through effective involvement in the learning process (Lave and Wenger 2003, p. 15).

The shift from an industrial to an information society has brought major changes in pedagogical conceptualisation. Thus, in contemporary society, didactic activities are rather determined by learners, it is preferable to vary activities, their development in small and heterogeneous groups, based on mutual support, learning rhythms being determined by learners. Productive learning and learning to problem-solve are the main focus, trying to integrate theory into practice and encourage the transfer of knowledge and skills from one discipline to another (Voogt and Pelgrum 2003).

In this context, educational relations are democratising, the teacher becomes an affective partner of the learner, guiding and not imposing the path and rhythm of the learners' formation. Hence one of the postmodern school's preoccupations is to make it attractive for students (Delors et al. 1996), prominently placed, in a professor's contemporary skills profile, are skills and personality traits such as: definite and positive communication skills, creativity to incite learning, empathy and tolerance for cultural differences, intellectual, and adaptable, as well as moral uprightness, supported by an ethos, shared by all teachers, to responsibly promote a desire for perfection, and attitudes and values that are necessary for contemporary life.

The basis for the design, organisation and development of didactic activities is the normative values and didactic principles that support achievement of educational objectives. They have a general, systemic and dynamic character that ensures fulfillment of the functions of the education process (normative—prescriptive, orientation of the education process towards achieving objectives, regulating activity of the instruction—education process). Some specialists consider them minimal teaching standards, being placed at the base of teaching activity (Iucu 2001).

Although many classic pedagogical principles are still valid, we see a change of their significance and a practical reevaluation due to relationships in the current educational field. Principles such as: the principle of the conscious and active participation of students in the learning activity; the principle of the orientation of the education process towards the harmonious development of the student; the systematisation and continuity principle; the applicability of knowledge; the

principle of socialisation; and the inverse connection principle are just a few of the most important that govern the didactic activity in order to achieve educational objectives and successful integration of the young generation into society.

It is worth remembering that non-compliance with one leads to diminishing the effects of others and to compromising the didactic act. Therefore, all these normative values have their roles and their well-established positions, being applied as a whole in every form of activity. They form a unitary system and provide a functional character to the education process and to didactic activity.

In contemporary pedagogical thinking, teaching should be related to a vision of learning as being an active, reflexive and conscientious student placed in a position to gather information and use it in different contexts, learning through action and reflection, by creating and solving problems, along with others. Thus, the teacher's tasks acquire different dimensions, creating a context of socio-cognitive dissonance, moderating, and socially facilitating knowledge accumulation.

Teaching and evaluation relationships are indissoluble and mutually interdependent. The function of assessment is to orientate and regulate teaching and learning processes and therefore needs to be conceived in accordance with the two requirements and specifics mentioned above. Thus, evaluation is done not only at the end of the process (summative, final assessment) but also before it (initial assessment) and especially evaluation during teaching and learning (assessment over time, formative assessment).

Under these circumstances, the design, organisation and management of learning situations become essential issues for achieving efficiency in didactic activity. The roles of the ideal contemporary teacher, concerned with their own development and attainment of performance, include various complementary aspects as it can be seen in Fig. 2.1. Tasks of an effective teacher.

2.2 Didactic Design

Acquiring knowledge, abilities, and skills in the field of information enhances student opportunities to learn independently as they begin to look for more and more complex and varied sources of information, with the aim of expanding their level of knowledge, to analyse and formulate competent questions and to refine their own critical thinking, contributing to the development of competencies valued in contemporary society.

A natural concern, in the mind of each teacher, is related to didactic design; to build those learning situations that substantially influence high level acquisition of required skills. Despite the multitude and variety of existing research in the field of education, we cannot demonstrate the existence of a generally valid teaching model to ensure full success. As the teaching process is strongly dependent on societal characteristics, student characteristics, and information content, we can say that training strategies prove their effectiveness at a probabilistic level.



Fig. 2.1 Tasks of an effective teacher

It is difficult to state the essential elements in creating learning situations relevant to students. Every constituent element (the psycho-social characteristics of teachers, educators, training time, location, scientific content, methods of teaching and learning, didactic means, forms of organising and training, teacher led, group, or individual, forms of evaluation: initial, continuous, and final evaluation) has its place, role and importance, with permanent in connecting relationships that ensure the success of a training session.

Scientific literature is not devoid of studies that seek to develop an explanatory theoretical framework of the characteristics of successful schools and teachers. Some specialists attempt to limit those essential characteristics to achieving effectiveness in teaching activity by using appropriate training strategies, appropriate classroom management strategies, and using an effective curriculum project (Marzano 2015).

Curricular design represents the anticipation and preparation of instructional and educational activities following the decision to implement a curricular vision. It has both a macro-structural dimension, aiming at attaining didactic competency through education goals assumed at the system and process level, as well as a micro-structural one, regarding the decisions that are made after choosing a certain method of organising the education process.

Macro-structural design is dependent on the policies of an education system and it is usually generated by higher-education ministries and accompanied by implementation recommendations. The micro-structural design has a school and teaching staff as implementing agents, detailing the didactic plan and harmonising education regulations at a system level with the specific educational reality generated by concrete socio-economic-cultural contexts.

The main resource that influences education design is teaching or learning *time*. Depending on this dimension, we have a first delineation between global design (learning cycle) and layout design (unit of learning or lesson). The teacher becomes responsible for the layout design, applying a procedural algorithm, whose graphic representation can be seen in Fig. 2.2. Steps in designing a course/seminar/teaching design.

Thus, the teacher builds operational objectives, in accordance with specific and general outcomes, selects information content according to the psychosocial characteristics of the group of students, taking into account their interests and concerns, not just the regulations of the school curricula.

The teacher should analyse availability of time, training environment features, teaching space limitations or opportunities, material resources that the education/school/academic unit has, as well as their own abilities to create or obtain necessary training resources.

The teacher develops, and creates strategies for (self)training and stimulating the target audience in order to provoke qualitative changes, in line with the proposed education objectives. He defines, at this planning stage, the types of learning experiences in which the trainees will be involved. He builds a methodological scale to support the approach and he develops assessment strategies that facilitate self-assessment opportunities and highlight the progress of students.

All these steps, as well as the curricular elements mentioned, must be harmonised to meet a single purpose, namely to achieve education objectives in an economical way, thus facilitating the acquisition of specific outcomes. It is also necessary to ensure the internal coherence of the structural elements of the learning context; the information and skills formed being associated with other similar information and skills in order to build the competencies concerned within a certain timeframe. Evaluation, as a real mechanism for feedback, should highlight the level of achievement of the proposed goals.

Any educational planning, being an anticipatory effort, benefits from support of implementation and evaluation processes, which allow for a return to the original plan and reconfiguration of short-term educational paths (a course/lesson, unit of learning/module). Thus, three essential elements are highlighted in educational design: *previous didactic activity*, which is subject to evaluation and to design

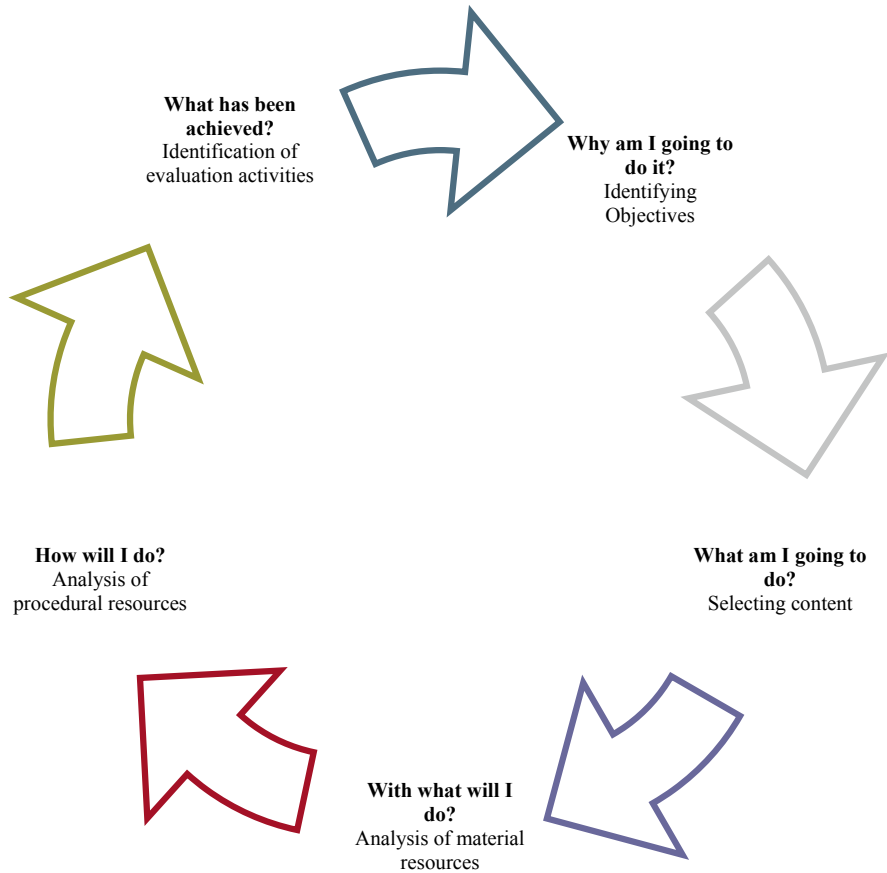


Fig. 2.2 Steps in designing a course/seminar/teaching design

improvement measures; the *concrete context* at the time of designing, with all the resources and limitations as well as the *requirements required by education policies* both at the academic level and of a geographical region and nation, which must be harmonised with the specific concrete socio-economic and cultural didactic context.

An important element in education planning is the choice of didactic strategy. The concept, originally used in areas such as the military, sports, and politics, loses its combative meaning in pedagogy, although preserving its notion of “achieving the objective effectively by overcoming formally-based obstacles” (Panțuru et al. 2008, p. 168). Although some authors reduce educational strategy to a combination of didactic methods (Cristea 2000), it represents much more than that. Metaphorically speaking, it is “a blueprint for scaffolding learning” (Buehl 2017). Thus, didactic strategy is an ensemble of decisions on the selection of processes and

operations or procedures and methods, considered to be the most appropriate, aimed at achieving one or more predetermined objectives.

The constituent elements of the strategy are: forms of organising the teaching activity (teacher led, group, or individual); type of learning that is to be done, learning task, which may be common to all, some, or totally differentiated; and the manner of conducting the activity by the teaching staff is closely dependent on the skill that will be formed as well as the teaching methods and means. Training strategies have important roles in training optimisation, with decision-making, regulatory, normative, and evaluation functions. They have an open and dynamic character, varying according to the teaching-learning activity flow, characteristics that allow for differentiation from algorithms.

Construction of a training strategy is strongly dependent on a teacher's pedagogical conception, on his professional skills and professional experience, training objectives of the training sequence, possibilities and characteristics of the trainers, training time, nature of the information content, type of learning that will be developed, and particularities of the physical environment in which the training takes place. Taking into account the impressive number of variables that influence the development of didactic strategies, we cannot establish accurate models to ensure an a priori efficiency. Scientific literature highlights the existence of a large number of didactic strategies, some outlined in typologies, more or less comprehensive but not exhaustive. We only emphasise some of the most well-known typologies.

According to **logical thinking criteria** Iucu (2005), there are:

- **inductive strategies** (learning from concrete to general, from intuitive to explanatory);
- **deductive strategies** (from general to specific, from hypothesis to observation);
- **analogical strategies** (knowledge is mediated by models);
- **transductive strategies** (explanation through metaphor); and
- **mixed strategies** (combinations of the above).

According to the criterion, **degree of directing/non-directing of learning**, there are:

- **algorithmic/prescriptive strategies** (with a high degree of a teacher directing the students' learning activity, low level of stimulation of pupils' creativity and originality):
 - **reproductive;**
 - **expository explanatory;**
 - **explanatory-intuitive (demonstrative);**
 - **algorithmic;**
 - **scheduled.**

• **non-algorithmic strategies** (active-participatory):

- explanatory-investigatory (semi-directed discovery);
- heuristic-conversative;
- independent discovery;
- problematised;
- investigative observation;
- experimental-inductive;
- creative; and

• **mixed strategy.**

In order to achieve efficiency in the educational act, it is necessary to have a good knowledge of existing strategies, combined with a level of teaching staff creativity that will allow the most appropriate particular educational approaches. Teaching strategies are not important or essential alone, but only a balanced combination with other structural elements of the learning context can build didactic performance.

Evaluation

1. Analyse comparatively the concepts: strategy and algorithm

Strategy	Algorithm

2. Discuss the percentage of prescription and creativity within a training strategy.

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3. Identify another typology of training strategies and argue for its didactic relevance.

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4. Synthesise the best-known contemporary perspectives on teaching that you know in a comparative analysis table.

Contemporary perspectives on teaching	The underlying learning theories	Specificity and peculiarities in the school field

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Abstract

After completing this learning unit, you will be able to:

- Identify the meaning of the term information literacy;
- Identify general competences in information literacy;
- Evaluate critical standards of information literacy;
- Compare existing models in information literacy.

Keywords

Information society · Information explosion · Information and communication technology · Information organisation · Types of documents · References records

3.1 Information Literacy Concept

Paul Zurkowski was the first to use the notion “information literacy”. The American researcher states that persons with skills in information area are “educated people with the purpose of applying information resources in their work place” (Zurkowski 1974). The conceptual foundation was made by the American Library Association (ALA): “in order to have information literacy, a person needs to be aware of the information necessity, to be able to locate it, assess and use it efficiently. People acquainted with information literacy are those who learned how to learn” (ALA 1989). During the time from Paul Zukorwski—1974 until the 1989 definition given by ALA, the concept had some changes according to methods of information retrieval and represented the basis of intellectual work techniques.

The American Library Association defines information literacy “as a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (ALA 2018).

The Alexandria proclamation on Information Literacy and Lifelong Learning of 2005 states:

Information Literacy lies at the core of lifelong learning. It empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals. It is a basic human right in a digital world and promotes social inclusion of all nations. (IFLA 2005)

Lau et al. (2014) presented the concept of Information Literacy (Fig. 3.1. Concept of Information Literacy).

CILIP (UK) Information Literacy Group updated (April 2018) the definition of Information Literacy:

- Critical thinking and discernment;
- Reflects more nuanced definitions of recent years;
- Focus on context, individual agency, empowerment of citizens; and
- No generic sets of skills and abilities to be acquired.

Information literacy is the ability to think critically and make balanced judgements about any information we find and use. It empowers us as citizens to reach and express informed views and to engage fully with society. (CILIP Information Literacy Group 2018)

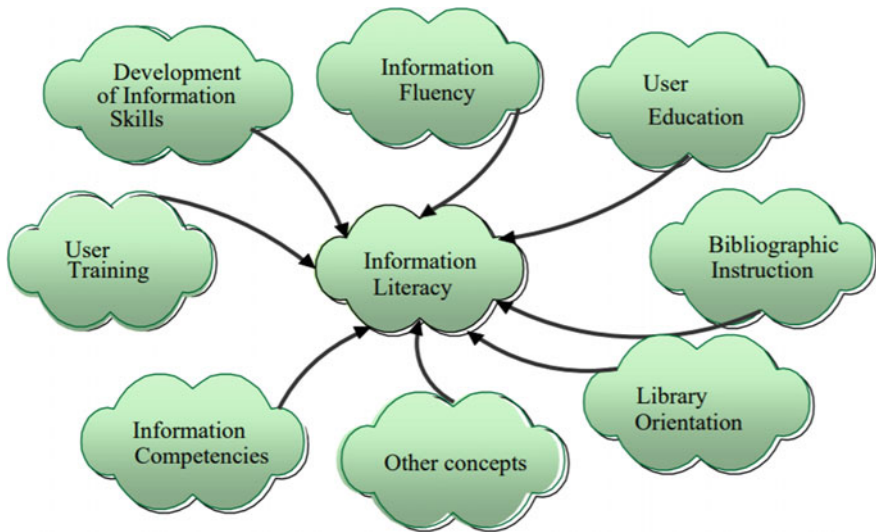


Fig. 3.1 Concept of information literacy (Lau 2014)

Media and Information Literacy: “an important prerequisite for fostering equitable access to information and knowledge and promoting free, independent and pluralistic media and information systems.

CILIP: Central role of Information Literacy in reinforcing “democracy and civic engagement” (CILIP Information Literacy Group 2018).

3.2 Equivalence of the Concept in Various Languages

Information literacy was considered equivalent with the Romanian term of *Cultura informației*. The equivalence of the concept *information literacy* from English in other languages is a difficult process, so information professionals from different countries should avoid semantic ambiguities. Thus:

- In German *Medienkompetenz* is used in respect of technical means of information identification and processing and *Informationskompetenz* is related to the correct perception and assessment of information;
- In French *la culture de l'information* or *maîtrise de l'information* means documentary—informational education (skills of documentary research);
- In Spanish “*alfabetización informacional*”, a literal translation of the form “information literacy”, is closely related to the “literacy” concept (“literacy training”), a term that is most people usually associate with basic skills like: reading, writing and arithmetic. We have here a semantic equivalence usually rejected by people. This is why, the term accepted today by Spaniards is “developing information skills and abilities” (DHI—desarrollo de habilidades informativas), a phrase that emphasises the overall process of information literacy, without referring to its primary point: literacy.

Ca01000043.schoolwires.net. (2018). [online] Available at: https://ca01000043.schoolwires.net/cms/lib08/CA01000043/Centricity/Domain/173/Brown_on_Classroom_management.pdf. Accessed 8 Jul. 2018.

3.3 Objectives of Information Literacy

Education in information literacy is one of the priority objectives of the learning process. Information literacy consists of:

- Creating a thinking style that is appropriate to the demands of the contemporary information society expressed by information access capacity, analysis of the information environment and development of alternative information systems;
- Creating skills and working abilities with information sources; and

- Independent solution for each problem by accessing, processing, storing and sending information.

3.4 International Concerns on Information Literacy

The International Federation of Library Associations and Institutions (IFLA) also includes, among its sections, an *Information Literacy Section*, as one of the most active and involved sections.

In *The Alexandria Proclamation on Information Literacy and Lifelong Learning* from November 2005, it is specified that: “[...] information literacy requires information competencies necessary for the recognition of information needs and to locate, evaluate, apply and create information in a determined cultural and social context; [...]”.

United Nations Educational, Scientific and Cultural Organisation (UNESCO) developed a portal containing important information concerning events, conferences and lectures in this area. The following logo of Information Literacy was chosen by competition, Fig. 3.2 Logo used for Information Literacy.

3.5 Competencies in Information Literacy

A responsible citizen—a student or a professional—should be able to know the need of information, to locate information, identify, access, recover, evaluate, organize and use it. A person with information literacy is able to:

- prospect—the ability of locating the relevant information, of detailed and critical examination and selection;
- interpret—ability of transforming information and data into knowledge, insight and understanding; and
- create (new) ideas—ability of developing new cognitive perspectives (McKenzie 1986).

Fig. 3.2 Logo used for information literacy



3.6 Standards of Information Literacy

3.6.1 Structure of Standards

The standards of information literacy include three basic components according to Figs. 3.3 and 3.4. Basic components of information literacy. Standards of information literacy established by IFLA, based upon international practice and experience are grouped within the three basic components of information literacy: accessing; evaluation; and use of information (Lau et al. 2014). Each of these has a certain significance:

- **Information accessing**—the user should access information in a sensible and efficient way;
- **Information evaluation**—the user should evaluate information in a critical and competent way; and
- **Use of information**—the user should use information in a correct and creative way.

In the evolution of IL components, new components have been found and added, such as: identify, find, evaluate, apply, and acknowledge information.

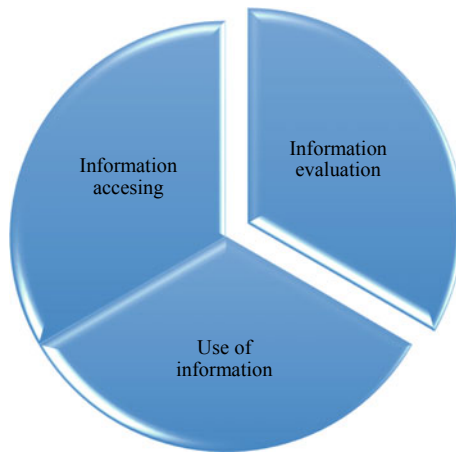


Fig. 3.3 Basic components of information literacy



Fig. 3.4 Basic components of information literacy

3.6.2 International Standards of Information Literacy

The first standards in information literacy were developed in the United States of America.

In 1998, the American Association of School Librarians (AASL) and Association of Educational Communications and Technology (AECT) published *Standards for Pupils' Information Literacy* (AASL 1998).

In 2000, the Association of College and Research Libraries (ACRL), which is part of ALA, adopted and published Information Literacy Competency Standards for Higher Education, 2000. This document establishes five standards to determine the level of information literacy for students. According to these standards, the student with a certain level of information literacy is able to:

- Determine the information type and quantity that he needs;
- Access the desired information in an effective and efficient way;
- Assess information and information sources in a critical way and assimilate the selected information into his knowledge and values system;
- Use the information for accomplishing a specific task, individually or within a group;
- Understand many of the economic, legal and social problems related to the use of information; and
- Use the information within the boundaries of ethics and legality.

For each of these categories, performance indicators and significant results are specified. The standards developed by ACRL are found in the ACRL manifesto, *Information Literacy Standards for Higher Education: A Manifesto, Third Meeting on Information Competencies 2002* adopted at the third IFLA meeting for determining information skills in Mexico on 11 October 2002. The manifesto includes eight competencies in information literacy that involve several skills:

1. Understanding the structure of knowledge and information;
2. Determining required information profile;
3. Building an efficient strategy for information search and retrieval;
4. Getting information;
5. Information analysis and evaluation;
6. Information integration, synthesis, and use;
7. Presenting researched information; and
8. Observing copyright.

In July 2006, the IFLA section—Information Literacy, was published in final form in the guide called *Guidelines for Information Literacy and Long-Life Learning* (IFLA 2002). This guide has the purpose of creating a unique framework for professionals engaged with initiating a training programme for information literacy. The document is firstly addressed to libraries in education institutions, but

can also be successfully applied in public libraries. It can be adapted and changed by librarians according to the needs and possibilities of their institution.

As far as the standards developed by ACRL are concerned, which group academic and research libraries, they insist on the concepts of “standard”, “performance indicator” and “result”, offering an efficient framework for evaluation. The user of information literacy follows these steps:

1. Defines the nature and context of the information he looked for. The performance indicators are:
 - His capacity of focusing and identifying various types and formats of possible sources that could be useful;
 - To consider the operation costs and benefits; and
 - To reassess the nature and context of required information.
2. Accesses the information he needs, in an efficient and effective way. For this, the performance indicators are:
 - The capacity of choosing the best investigation methods or the most adequate systems of “information retrieval”;
 - Building and implementing adequate research strategies;
 - Retrieval of information online or otherwise using different methods;
 - Improvement, if necessary, of the research strategy (at the end of this route); and
 - Extracting, recording, and administration of information and sources.
3. Evaluates in a critical way the retrieved information and data sources including the data selected in his cognitive memory. The performance indicators are:
 - Synthesising the main ideas extracted from retrieved information;
 - Applying initial criteria for assessing both information and sources;
 - Building new concepts starting from the main ideas;
 - Comparing new knowledge with previous, in order to determine its validity;
 - Comparing their own acquisition for a subsequent validation; and
 - Determining if the initial hypothesis needs to be revised.
4. Uses the information in an efficient way, in order to accomplish a specific objective in time. Performance indicators are:
 - Applying new information and that previously obtained, in planning and creating a certain product;
 - Revising, in a critical way, the process with respect to the respective product; and
 - Communicating the product to other information stakeholders.

5. Understands many of the economic, legal and social issues, in context of use, informs and has access to information, being aware of social, economic, legal and moral elements. The performance indicators are:
 - Understanding the moral, social, economic and legal elements, which represent a foundational basis in the world of information and TIC, as a consequence of laws, regulations and institutional policies related to information resource access and use; and
 - Use of information sources in communication processes and their contribution to the final product.

3.7 Models of Information Literacy

There is a high number of research models and problem solving in information literacy. The most well known are: BIG6, Kuhlthau, The Seven Pillars Model, Research Cycle. Next, SCONUL, a model developed and updated in 2011 by the Society of College, National and University Libraries (SCONUL).

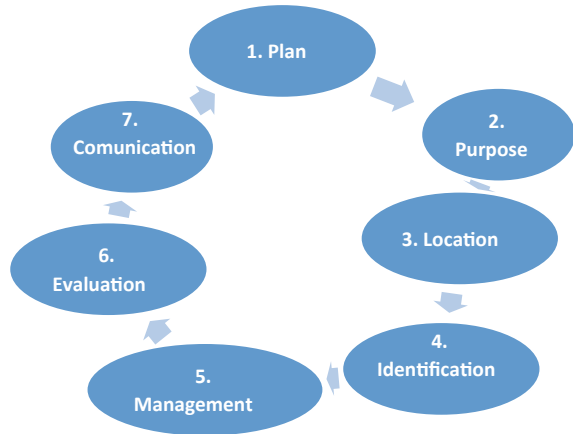
3.7.1 SCONUL Model

The model resulted from reflection on professional practice of those involved in developing information capacities within scientific communities. It is irrelevant whether the user has access to a virtual library via a computer or access to a physical library, or whether the user is a child doing his homework or a university professor; the model should cover all contexts. Still it is important to address the connection between the model and obtaining knowledge in universities. Consequently, due to its genesis, the SCONUL model became more important relative to other models. A schematic form of the SCONUL model is shown in Fig. 3.5 SCONUL model of Information Literacy.

These are seven basic competencies and their components (SCONUL 2001):

1. Ability *to recognise* an information need.
2. Ability *to distinguish* ways in which “lack” of information can be addressed:
 - Knowledge of appropriate type of resources, both printed and unprinted;
 - Selection of most appropriate resources; and
 - Ability to understand issues that affect the sources accessibility.

Fig. 3.5 SCONUL model of Information literacy



3. Ability *to build* strategies in order to locate information:

- To develop a systematic method adequate to the need; and
- To understand the principles of database construction and generation.

4. Ability *to locate and access* information:

- To develop appropriate search techniques;
- To use information and communication technologies, including international academic networks;
- To use appropriate indexing and abstracting services and citation databases; and
- To use current information methods.

5. Ability *to compare and assess* information obtained from different sources:

- Understanding the issues related to authority;
- Understanding the reviewing process in scientific publishing; and
- Appropriate extraction of information that corresponds to information need.

6. Ability *to organise, apply and communicate* the information to other people in ways appropriate to the situation:

- To cite the references in projects or theses and such like;
- To build a personal bibliographic system;
- To effectively communicate using the appropriate means; and
- To understand issues related to copyright and plagiarism.

7. Ability *to synthesise and build* based upon existing information and contribute to create new knowledge.

3.7.2 CILIP Information Literacy Model

CILIP have developed an information literacy model that contains eight competencies or understandings that a person requires to be information literate:

- A need for information;
- The resources available;
- How to find information;
- Need to evaluate results;
- How to work with or exploit results;
- Ethics and responsibility of use;
- How to communicate or share findings; and
- How to manage findings (Infolit.org.uk 2018).

3.7.3 Seven Faces of Information Literacy in Higher Education

This model was developed by Christine Bruce (Bruce 1997).

Category one: information technology appreciation.

Information literacy is seen as using information technology for information retrieval and communication.

Category two: information sources appreciation.

Information literacy is seen as finding information located in information sources.

Category three: information process appreciation.

Information literacy is seen as executing a process.

Category four: information control appreciation.

Information literacy is seen as controlling information.

Category five: knowledge construction appreciation.

Information literacy is seen as building up a personal knowledge base in a new area of interest.

Category six: knowledge extension appreciation.

Information literacy is seen as working with knowledge and personal perspectives adopted in such a way that novel insights are gained.

Category seven: wisdom appreciation.

Information literacy is seen as using information wisely for the benefit of others.

Teaching Tips/Teaching Suggestions

This learning unit, being an introductory course, requires a special teaching organisation. The purpose of such a course is to provide an overview on the field addressed and to prepare learners for better reception of information to facilitate deep learning.

Although active and inquiry based learning are essential aspects of developing information literacy (Secker and Coonan 2011), a distinct feature of this course is to give greater attention to the formation of an appropriate teaching relationship with learners and to conduct an initial informal assessment, as a basis for changes made to the initial didactic design.

One of the most important pedagogical principles is the appropriateness of the formative approach to the particularities and specifics of a learning group. Knowing the level of scientific training, of pre-requisites, the level of expertise in the IL, and of their interests and expectations fundamentally alters didactic design.

Therefore, our recommendation is to give more time than in a typical course to stages such as: acquainting oneself with others and to initial verification of knowledge. Learners should be informed about the purpose of the initial evaluation, explaining the importance of knowing their current level of knowledge in designing a pedagogical approach appropriate to their learning needs.

These two stages can be designed as distinct activities or merged into the same pedagogical sequence. If we were to consider a combination of the two stages, the ideal would be, after a very brief presentation by the teacher, to provoke a dialogue, a conversation between all the participants. The rules of this conversation could be the following:

1. Each speaker should introduce himself before he speaks; and
2. Everyone should wait for the person who is already engaged to finish speaking.

The questions that will be asked will address the very purpose of IL and will use the main question forms: WHAT? WHO? WHY? WHERE? WHEN? Presenting the necessity and timelines of IL education in the formation of students' competences is a natural requirement of this stage. *The Starburst Explosion Method*, explained in Chap. 10 of this volume, can be used for this purpose.

If we design the two stages as distinct activities then at the stage of *capture attention/warm up*, a game can be used to animate the group. We realise that a group has a particular psychology that is different from that of an individual. Specialists and teachers consider it ideal to have 8–25 people for an educational activity, and that it is a significant factor to improve student learning (Watson et al. 2017).

For a newly formed group to work at an optimal level, it is necessary to set rules for the group from the first lesson. Ideally, these rules should not be imposed by the teacher but negotiated by the group members and built together with the trainer. The reason behind this recommendation is that if the rules are negotiated then they can be accepted and assumed more easily, if and where needed, avoiding, as much as possible, factors that could disrupt the didactic activity.

A natural question that any trainer would formulate is: *On what criteria do I decide whether I will design an activity in which the two steps will merge or be separated?*

One of the most relevant criteria, not excluding others, is the development phase at which the group is. If the group has been constituted for a long time then we

assume they know each other and that certain relationships have already developed. Thus, it is pointless to insist on some aspects, which may be disregarded or categorised as unhelpful in carrying out the teaching and learning activity.

If the group is not homogeneous and was recently constituted then animation games are more than welcomed, as they facilitate the relaxation of the participants, creating a pleasant, secure, and stimulating climate for the group's activities.

The authors recommend the use of self-presentation games, which should not exceed 15 min. Specialty literature abounds in variants of these types of games from which the reader can choose the most appropriate activity. We only insist on some form aspects such as: the seating of the participants, and the order of talking.

If space permits, it would be preferable for participants to be seated in a circle, to facilitate the view of each participant and to establish a position of equality among the members of the group. We recommend that the group leader as well, the teacher or the librarian, should be a part of the circle.

The trainer will: initiate the activity, announce its purpose, briefly describe the manner in which the activity will develop, present the time allocated to each participant; and state the estimated duration of the activity. In order to facilitate the task of the trainees, and to provide a model, the trainer will begin to introduce himself by saying his name and a few personal things about him, slipping something fun in the presentation in order to make participants feel more comfortable. Also, the trainer can highlight the link to IL. After finishing, he will invite participants to continue, allowing anyone to introduce himself.

If we want to avoid the situation in which none of the trainees have the courage to continue, we can use a ball to throw to a participant, who will have the obligation to continue. If we want to use a string of twine, the trainer will tie a finger with some of the material, inviting the rest of the participants to do the same. At the end of the activity, the trainer will highlight the social network that was formed and will compare it to an information network, thus linking it to IL.

Ideally, we would have had the chance to learn the motivation and the area of interest of the trainees participating in this course. If we did not have this opportunity, we can design a distinct activity in which the participants will reveal their goal for choosing the course. Expectations regarding the development of the course as well as individual motives can be freely discussed or set out on paper. Authors prefer the use of cards, which may even be anonymous, to allow even the shiest trainees to express their opinions.

Adequate Teaching and Learning Methods

The authors' choice is primarily the use of presentation methods for this first course. The arguments for this choice are:

1. Inter-recognition activities provided in the first part of the course are quite time consuming, but we need to give them the proper attention in order to determine the dynamics required for a successful course in the future;

2. The activity, in which we learn the motivations and interests of learners, especially if it is done orally, can also be time consuming. If done in writing, we can start from the premise that not all participants reflected on these issues, thus, there is the possibility that 10 min will not be enough for any real insight;
3. Using the presentation methods in this course, we can prepare an appropriate set up, we can arouse the curiosity of the participants, highlighting the transdisciplinary role that IL has in academic and professional training but also in lifelong learning; and
4. Classical presentation methods, if they are used with craftsmanship, may facilitate the control of an environment, and a pedagogical context that may not be familiar to the participants. Thus, we can create a state of psychological comfort and ensure trainees’ receptivity using the allotted time efficiently.

The main methods of teaching and learning, which we recommend for this course are: conversation, exposure, and lecture. All these methods are described in detail in Chap. 10, in the Presentation Methods section.

Practice

Fixing freshly acquired knowledge is a very important stage in the teaching process as it allows for the review of essential information, facilitating a hierarchy of this depending on its importance. This will enable learners to achieve a scaffold of knowledge, a logical scheme through which to organise their learning process.

A conceptual map is a very useful method at this case. It has the great advantage of being a graphical method allowing students with more dominant learning styles to utilise it. It is described in detail in Chap. 10 of this paper.

Applications

1. Discover and describe briefly another model of Information Literacy in the specialist literature.

Short description:

.....

The main advantages of the model are:

.....

Less clear issues:

.....

Evaluation

The **KWL method** is a teaching—learning method but also an evaluation method that helps a student to visualise the information that he has acquired in a certain didactic activity and to become aware of the need for information that is outlined in the light of new knowledge. It is a method that invites reflection, and facilitating the practice of metacognitive skills. Also, it is a tool that can also be used in other contexts, and educational disciplines. Generalising this manner of organising information, the student acquires a graphical formula of the learning process, applicable in various contexts. It is recommended that, before using this method, the trainer explain to students how to use it, exemplifying it with the current learning unit.

K (Knowledge learners have about a given topic)	W (What learners want to know more about)	L (Learned information)

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Abstract

After completing this learning unit, you will be able to:

- Define the need for information;
- Identify the stages of a research strategy;
- Build personalised research objectives according to information requirements; and
- Analyse the effect of different methods for searching for information.

Keywords

Need of information · Searching strategies · Boolean search

Summary

Accessing information is based upon two elements:

- Define and outline the need of information; and
- Location/Information retrieval.

4.1 Defining the Need of Information

Users' information needs change as a consequence of electronic documents, whose content is available for all users. These information needs are only expectations of library users, depending on the librarians' needs to re-orientate their collections and services, while the user feedback is considered as particular factor in measuring the usefulness and efficiency of every library. In order to document, they need to define their requirements, to formulate key-questions, and, of course, to know how to locate, assess and use information from several electronic sources.

4.1.1 Expressing and Defining the Need of Information

- Research initiation: you have to create a report, a theme, an essay, or a project;
- Writing techniques; and
- Research initiation methods.

4.2 Research Question

Definition of research subject matter will involve the following stages:

- Formulating a preliminary question, writing a few lines to specify what you aim to research and expectations of research results; and
- Starting with a theme sketch.

A research question should observe the following conditions:

- It is short and accurate;
- Clearly describes the main research questions;
- Must additionally offer the possibility of motivating research;
- It has to be realistic and lead to a conclusion; and
- The research question is not specific in the beginning; it becomes gradually clear while conducting the research.

Creating a preliminary research question should answer the following questions:

- Which aspect of the subject do you wish to investigate?
- What theoretical perspective are you going to use?
- What methods did others use?

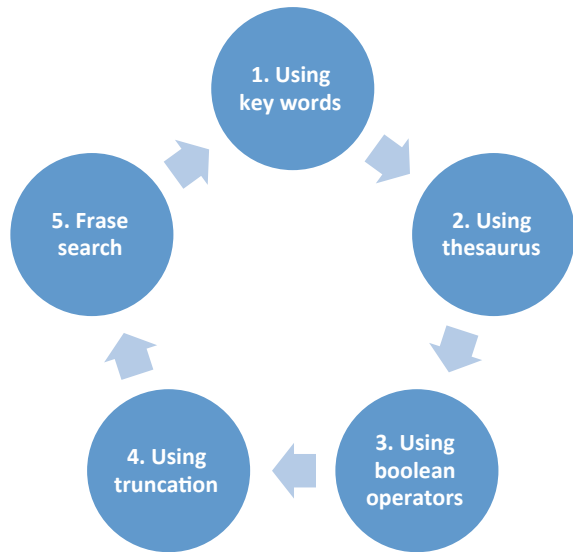
4.3 Research Strategies

We propose refining research terms using the following methods (Fig. 4.1):

4.4 Keywords

Keywords are words that define the thematic content of a document. A keyword is a word or a phrase, significant for the research topic that will allow reference retrieval in order to retrieve information.

Finding and combining keywords.

Fig. 4.1 Search strategies

After an overview of the research field, a preliminary research question is formulated and an outline or scheme is designed, then we look for the required information to support and develop the proposed theme. A detailed search is started. An indicative research offers keywords related to the research question and outline. Keywords are used for searching.

Keywords may have various meanings in different academic subjects. We need to find the suitable word for the researched subject matter.

A keyword maybe indexed in a one database but not indexed in another. The use of a keyword is different according to the research field:

- General terms are used for libraries;
- Specific terms are used for academic databases; and
- Common terms for news databases.

Other factors to be taken into account for defining keywords are:

- Find out if the databases have a subjects' index or a thesaurus (hierarchical index of topics, for example PubMed language MeSH)
- What is the language used in the research?
- If it is English, we need to consider that certain words are different in UK English with respect to American English
- Do the keywords have synonyms?

A list of words is developed using the following Table 4.1.

Table 4.1 Keywords

Keywords in English	English synonyms	Keywords in other languages	Synonyms in other languages

A search keyword uses free text to identify all the records including the word or words introduced in the search environment. The results may come from any aspect of the recorded data, meaning elements of bibliographic description, such as: title, abstract, and subject within the libraries’ catalogues, databases and websites.

Websites are more easily retrieved with keywords from common language, while databases use a controlled vocabulary, a list of terms in a form used for the document’s processing.

4.5 Using a Thesaurus

A thesaurus is a predefined set of terms used to describe the content of an article. A search based on a controlled vocabulary will provide optimal results if we look in the databases using that specific vocabulary.

Example: Controlled vocabulary Medical Subject Headings (Mesh) is the vocabulary used for indexing medical subjects in the World Health Organization (WHO) database, PubMed, which is a free to access medical database available on the Internet.

The use of predefined indexing terms will allow a more accurate search based on the structured language of the database. Also, for publishing in certain journals, the authors are directed to check the keywords in the MeSH controlled vocabulary and to use then in the form adopted there so that the article’s retrieval systems have maximum effect (Fig. 4.2).

Another very often-used thesaurus, in Romanian libraries also, is EuroVoc-multilingual thesaurus of the European Union, available in many language interface, <http://eurovoc.europa.eu/> (Fig. 4.3).

After selecting the domain and language, then the DOWNLOAD button is clicked and we retrieve an electronic document containing a list of general and specific terms used in this thesaurus (Fig. 4.4).

We can also search in ProQuest, an Ann Arbor, Michigan-based global information-content and technology company, founded in 1938 as University Microfilms by Eugene B. Power. (Fig.) ProQuest provides solutions, applications, and products for libraries. ProQuest provides the British Nursing Indexing Thesaurus (Figs. 4.5, 4.6 and 4.7) (Proquest.com 2018).

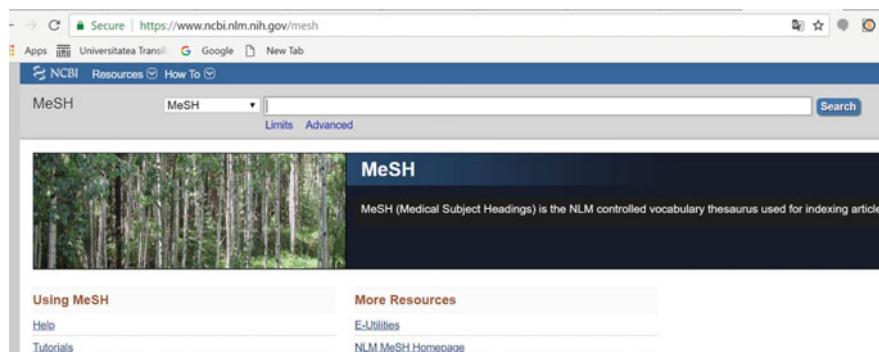


Fig. 4.2 System for checking and identification of keywords used in controlled vocabulary MeSH



Fig. 4.3 Interface of multilingual thesaurus EuroVoc



Fig. 4.4 EUROVOC thesaurus, education, communication and communications

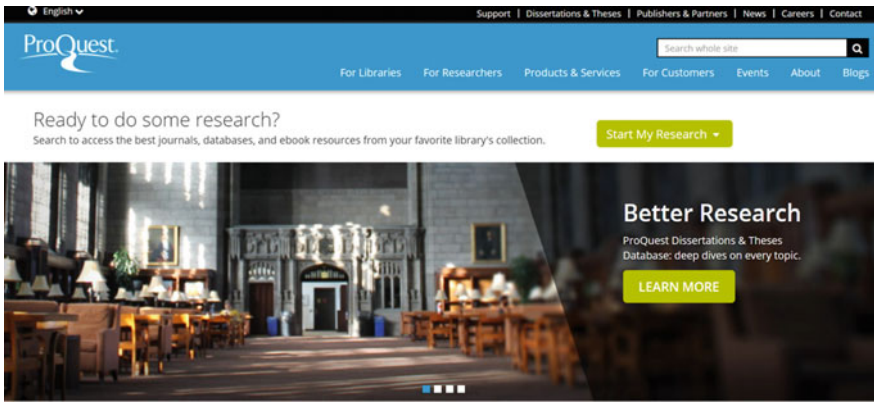


Fig. 4.5 ProQuest provides British Nursing Indexing Thesaurus

4.6 Boolean Logic Operators

Boolean search is a method used to combine words and phrases in order to obtain more relevant search results. The principles of Boolean logic will allow you to relate the concepts in sets. Connection terms, known as operators, are used in all types of search, including library catalogues, databases and Internet.

Boolean logic was developed by the Irish mathematician George Boole.

The 3 main Boolean operators are:

AND, OR, NOT.

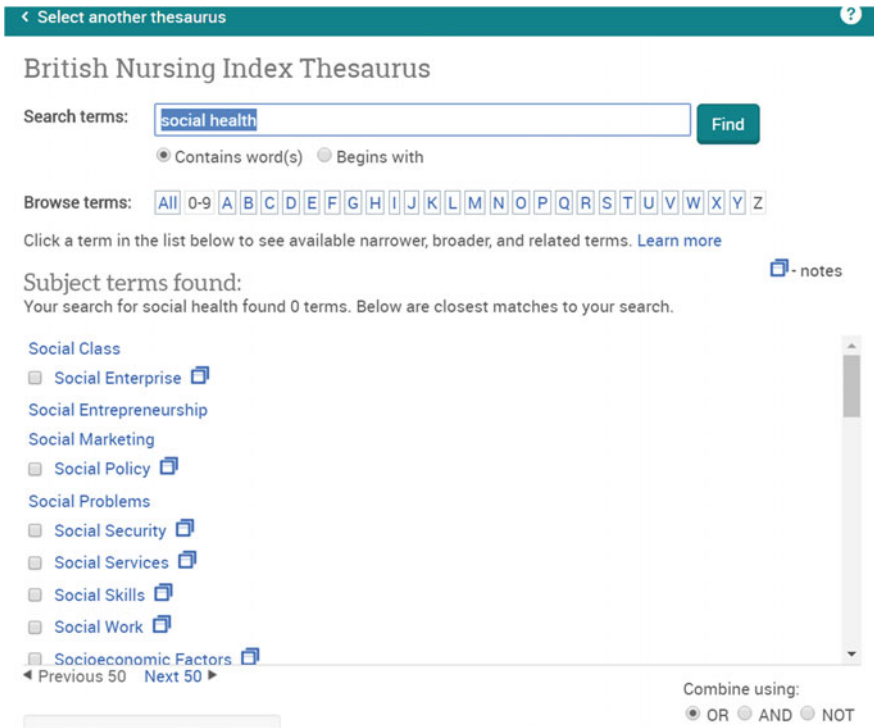


Fig. 4.6 ProQuest provides British Nursing Indexing Tezaurus

Example:

- search word1 AND word2 in order to find documents containing both word1 and word2;
- search word1 NOT word2 in order to find pages containing word1 and not word2;
- search word1 OR word2 in order to find pages containing the either word1 or word2.
- AND operator directs search

AND operator is used to connect various concepts in order to focus the search.

- OR expands the search area

OR operator is used to connect synonymous terms. It may prove very useful in case a search returns less results than you require.

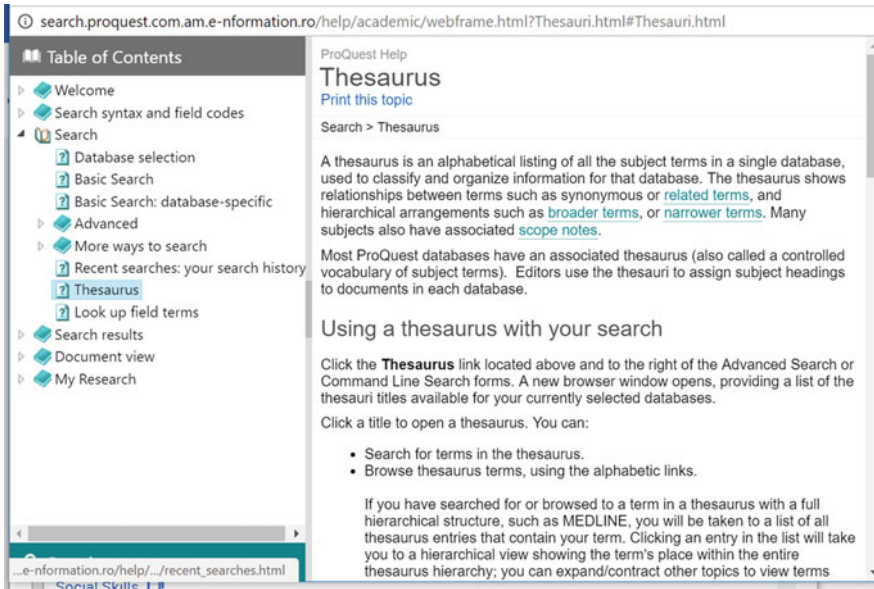


Fig. 4.7 ProQuest provides British Nursing Indexing Tezaurus

- NOT operator narrows the search

Sometimes, when performing a search, a great number of articles upon a certain subject will be returned. The NOT operator may be used to eliminate articles of no relevance.

In case you perform a complex search, the efficiency may be improved by combining searches. Searches are combined by closing individual searches between parentheses and then by connecting these searches with a Boolean operator.

If you retrieve too many results on a given subject then you can use AND to direct your search. The more terms that are connected with AND, the more focused the results. Remove truncation. If you retrieve too many records on an unrelated subject, use NOT to narrow the search. If you get too few records for your topic, use OR to expand your search and to increase the number of references that you are going to find. Use truncation or wildcards in order to seek alternative ways of spelling or choices of your term.

Combining keywords enables finding the most appropriate information resources about a subject. We recommend creating various combinations of keywords using Boolean operators, for example AND-OR-AND NOT. A Boolean machine can help to teach students how these operators work (Fig. 4.8 Boolean machine).

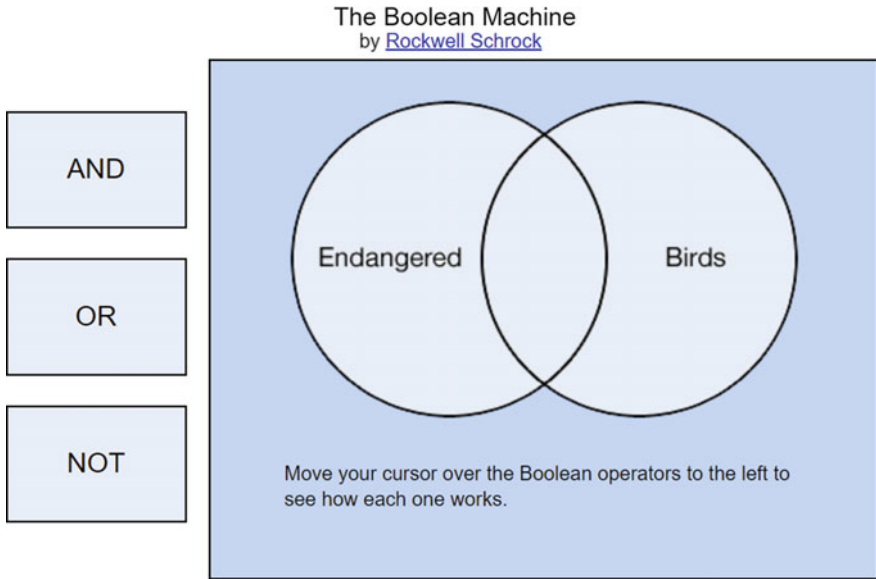


Fig. 4.8 Boolean machine (<http://rockwellschrock.com/rbs3k/boolean/>)

4.7 Search of Phrases

Search of phrases allows you to combine terms so that they are retrieved one next to the other and in the same order; they are indicated putting quotation marks around terms.

For example, “New York Stock Exchange” or “Hilary Rodham Clinton”

4.8 Truncation

Truncation may be very useful when you wish to retrieve variants of the same term. In order to truncate a word, keep the root or radical replacing the changing part with a wildcard symbol. The symbol may be *.

Example:

If you wish to search the terms: communication and communicate, the root is “communicat” and the searched truncated term will have the following form: communicat*

Suggested Teaching

Warm-Up/Introduction

A pre-test

Prepare an envelope with the questions: Who decides what the need for information is? In other words, who decides what information is needed? Who and how can he use the information? What is the cost of knowledge and ignorance?

Variant No. 1

Divide the participants into three groups. Ask them to choose one leader from each group. He will choose one of the three cards. The trainer will share paper sheets for each participant and explain to the participants that in the first phase they will answer individual questions and query the answers. In the second phase, they will discuss and harmonise the answers. In the third stage, leaders will answer questions with the group's answers and arguments.

Variant No. 2

Each participant receives one card with all the questions or, as the case may be, the age of the participants, with only one question of those mentioned above, ensuring that all are written on the cards. Also, other questions of greater relevance can be formulated.

Accept any reasonable answer and explain to the students that they will get more information about these topics during the course. Announce the topic to be discussed and the objectives targeted, noting the key terms on a whiteboard or flip chart.

Brainstorming

Ask students to generate as many ideas as possible for terms referring to “the need of information”. Write them on the whiteboard or the flip chart as students express their ideas. At the thought generation stage, no response will be criticised.

Teaching activities

Order of teaching sequences:

1. Learning by discovery for the steps of formulating research questions;
2. The conversation method for understanding conditions that research questions have to meet;
3. Method of Exercise for understanding preliminary research question;
4. Explanation method for understanding research strategy;
5. Mosaic method for information search strategies; and
6. Demonstration and modeling—their formative variances for practising new skills.

Learning Through Rediscovery for the Steps of Formulating Research Questions

Problematic situations can be organised in such a way that questions arise in the minds of students without them being formulated by the teacher. A collage of words can be created in a short paragraph. This paragraph will not contain words from which the purpose of communication is deducible, nor will it have unitary writing techniques. It will be vague and nonspecific. Students will be asked to express their opinion on this paragraph.

If independent rediscovery is found to be difficult to implement then directed rediscovery can be used. Thus, the teacher can lead rediscovery through suggestions, questions, and various clues.

The purpose of this teaching sequence is for students to discover the essential questions of defining the need for information:

- What is the purpose of initiating a research?
- What are the appropriate writing techniques?
- What are the most suitable methods to initiate research?

A detailed description of the method can be found in Chap. 10 of this volume.

The Conversation Method for Understanding the Conditions that Research Questions Have to Meet

These conditions will be written on a flip chart or whiteboard. They can pre-written, prepared and just brought in front of the students. Each condition will be discussed. The benefits of complying with these conditions and the risks assumed when the conditions are not met will be analysed.

Possible questions that can be addressed:

- What do you think are the benefits of meeting these conditions?
- What do you think would happen if they were not observed?

All the answers received will be recorded on the board/flip chart. A detailed description of the method can be found in Chap. 10 of this volume.

The Exercise Method for Understanding Preliminary Research Questions

Trainers will articulate and explain the three questions and students will be asked to sketch a research topic by answering the three questions. Students have 10-min for the task, after which the research questions that are offered by the students will be discussed. It is recommended only to discuss a maximum of three research

questions, because the time available will not allow students a profound study of their concerns. If there are more willing, we can ask each participant to focus on the following stages of the lesson, for further clarification, ensuring that in the next lesson or at the end of the lesson, everyone can get feedback for their work.

Uncertainties can be raised, using questions to help the student in his understanding. For example: “The theme that you chose is very interesting. Do you think this theoretical perspective that you have chosen is the most suitable? Could you also find another perspective? What would it be? What conclusions will you reach by studying the methods used by others? What is the purpose of your research? Are there elements of innovation? Can you find some?”

It is advisable to remind students that it is recommended to allocate more time to answer such questions. It can also be a reflection theme for home and can be debated at the next session.

Explanation Method for Understanding the Research Strategy

The most important ideas from previous tasks can be summarised briefly and make a smooth transition to the task of identifying search strategies.

Very briefly explain to students each method of searching for information and then draw Fig. 3.1, verbalising the steps as they are drawn. If the scheme is pre-prepared, we can save time and spend more time in other tasks. A detailed description of the method can be found in Chap. 10 of this volume.

The Mosaic Method for Information Search Strategies

The group can be divided into 4 teams. Within these groups each will be asked to pick a number from 1 to 4, each withholding the chosen number. New groups are formed according to the chosen number, so that all students with the number 1 will sit in a corner of the room, everyone with number 2 in another corner. We will do the same with the number 3 and the number 4. It is important to tell the students not to forget their original group, and to be attentive about the task, because they will become the spokespersons of the second group, instructing the first group from what it learnt.

Each team will receive a relevant text, prepared in advance. The texts that students will receive are incorporated in the Summary section of this chapter. One group will get the text “Using Key Words”, the second “Using a Thesaurus”, the third group will receive “Using Boolean Operators”, and the final group will receive two smaller sections: “Using Truncation” and “Phrase Search”. Students will read the materials and talk to each other in order to understand the fragments. When each group has completed the task they will return to their original group and will share what they have learnt. Eventually, they can build a conceptual map starting from Fig. 3.1. Search Strategies, noting at each point the essential concepts. The teacher will have the task of moderating the discussions, if necessary, as a resource person

where and when needed. It is important for the teacher to ensure that students understand every strategy. A detailed description of the method can be found in Chap. 10 of this volume.

If the group is smaller and does not allow such a division, we can divide the group into 2 subgroups. One group will have the task of understanding and teaching the first two strategies Using key words and Using thesaurus, and the second group, the other 3 strategies.

Demonstration and Modeling—Their Formative Variations for Practicing New Skills

Through the demonstration method, described in Chap. 10, the teacher will show students how the search strategies taught work. Likewise, the teacher will make a connection of the research questions, their proper formulation and the need for information. He can use both an inductive approach, as well as a deductive one, according to his preferences and the particularities of the group of trainees.

It would be ideal if the training room was to have enough computers for students to practise what they learned, namely to model the structure proposed by the teacher in order to search required information. During modeling, the role of the teacher is minimised, he becomes a consultant, a mirror reflection of the student. The actions of the trainer will be restrained, having only a supporting role for the student, by formulating some reflexive questions, by encouraging them and monitoring students. At the end of the activity, the teacher will praise student behaviour and will highlight the positive aspects of the activity.

Review

The teacher together with the students will create a conceptual map, on a flipchart or board, with only the most important issues discussed during the lesson. Since such maps were made throughout the lesson, with more knowledge-building activities, it will have a very short duration. We will call it “Review Knowledge in a Minute”. It has the role of imprinting on the minds of trainees the essential concepts, facilitating learning concepts from the lesson.

Suggestions for Solving Your Homework

Homework:

Formulate a research topic in your field of study. Focus on a maximum of two research questions. Identify the key terms and start the search process for studies conducted on the subject.

Applications

1. Using the Snowball strategy, you can search for information, if you have a keyword or a name. Search for a study relevant to the subject of your research, the names of the authors whom the researcher quotes and make a bibliographic list of those names. Use the same strategy for other papers that you consider relevant.
2. Build a structure to record your searches.

To record searches is as important as search in itself. Organising your search for information by recording searches will relieve you of many inconveniences caused by redundant repetitions.

Registration categories The research in question

<i>The concepts used</i>	<ul style="list-style-type: none"> • • •
<i>Search tools</i>	<ul style="list-style-type: none"> •
<i>Search alternatives (synonyms, alternative words)</i>	<ul style="list-style-type: none"> • • •
<i>Search strings</i>	<ul style="list-style-type: none"> • • •
<i>Results</i>	<ul style="list-style-type: none"> •

Evaluation

1. Define the need of information

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2. What are the stages for defining a research subject?

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3. What is the condition for formulating the research question?

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4. Which research strategies do you know?

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Webography

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Locating and Retrieving Information

5

Abstract

After completing this learning unit, you will be able to:

- Identify real examples of documents;
- Argue about the need to process information and documents; and
- Exercise teamwork skills.

Keywords

Informational sources • Type of documents • Document processing

5.1 Traditional Information Sources—Libraries

A library's document or publication catalogue is an assembly of items organised according to certain criteria (such as content, or form) having the purpose of being used for information and documentation.

A work is an assembly consisting of information support, the data recorded within and its significance are meant for consulting, study, evidence etc.

A primary work is created by practical activity and contains original ideas, solutions, calculations, interpretations and such like.

The main elements of a primary work are: author, co-author, title, short title, preface, introduction, content, chapter, note, afterword, annex etc.

There are two kinds of primary works:

- Non-periodic primary works including: brochure, book (treatise, monograph, handbook etc.), tribute volume, glossary, dictionary, map, atlas, album, standard, pattern, publications of congresses, conferences, meetings, symposia, report (research report, press report, journey report), Ph.D. thesis, scientific

communication, project, shopping catalogue, leaflet, technical documentation, regulatory documentation, specification, graphics, and audiovisual materials.

- Periodic primary works including: periodical (article, editorial, supplement), journal, newspaper, yearbook, address book, almanac, and calendar.

A secondary work is created by information and/or data classification from one or more primary works and contains their identifying features.

The main types of secondary documents include:

- Annotation;
- Bibliography (analytical bibliography, hidden bibliography, cumulative bibliography, current bibliography, bibliography of references, recommended bibliography, open literature, general bibliography, national bibliography, topic literature, retrospective bibliography, selective bibliography, special bibliography);
- Catalogue (alphabetic catalogue according to authors' names and titles, collective catalogue, numeric access catalogue, library catalogue, systematic catalogue);
- Compendium;
- Encyclopedia;
- Catalogue sheet (document-sheet, term-sheet etc.);
- Guide, index (publication index, alphabetic index, cumulative index, authors' index, pattern's index, citations index, formulas index, titles index by permutation, periodical index, systematic index);
- Lexicon; and
- Review, essay (analytic essay, indicative essay), reference, essays' journal, titles journal, abstract (author's abstract), and documentary synthesis.

5.2 Cataloguing

Item cataloguing, and implicitly item information, comprises the entire number of operations performed to organise items so that they can be retrieved and assessed. The main forms of analytical and synthetic item cataloguing include: bibliographic description, content classification and index, annotation, essays and articles.

Elements of publication cataloguing are presented in order to familiarise the reader with them, as they will be used later to retrieve information.

5.2.1 Bibliographic Description

A bibliographic description is made for all categories of works, specifying the necessary elements for characterising and identifying the types of works, which are

part of libraries' collections and should be applied in item cataloguing both for manual systems and automated systems.

5.2.2 Descriptive Features

Bibliographic description for a library catalogue consists of the following bibliographic features, characteristic to each item, required for identification and differentiation:

- Star;
 - Star author;
 - Title heading;

- Description or descriptive note body;
 - Title;
 - Alternative title;
 - Collective title;
 - Joined title;
 - Multilingual title;
 - Parallel title;
 - Caption or title information;
 - Edition particularities;
 - Issuing or publishing data;
 - Collation;
 - Quantity characterisation;
 - Format;
 - Series or collection; and

- Notes and observations of cataloguer.

Traditional catalogues are catalogues including mobile cards with bibliographic description of publications. The description is made according to the International Standard of Bibliographic Description (ISBD).

5.2.3 Classification

A classification is an operation of “arranging books or their description in the most advantageous manner for the readers” and responds to a logical need of ordering human thought.

A classification is an intellectual process, a logical operation of grouping objects according to their degree of similarity and of separation according to their degree of

differentiation. It is the operation that helps determine the class to which a work belongs in order to distribute materials on domains, considering the content, so that they can be retrieved. However it is not only a general grouping of topics, but also involves arranging them in a logical order to establish a relationship among topics.

The purpose of classification is to make information available to the user in due time.

Classification consists of the systematic division into classes according to thematic content.

The main library classification systems are:

- Universal Decimal Classification;
- Dewey Decimal Classification;
- Bliss Bibliographic Classification;
- USA Congress Library Classification;
- Colon Classification of Ranganatan; and
- Cutter Classification.

The Universal Decimal Classification is a systematic classification scheme based on the decimal division principle of all human knowledge. Universal Decimal Classification (U.D.C.) represents a systematic classification scheme used in libraries as a general scheme of ordering all domains of human knowledge, by using a decimal form notation to represent items' topics. The development of (U.D.C.) scheme is based upon a hierarchic principle, starting from general to particular; each of the components are divided in a decimal system, reaching different levels of structure representation: classes, divisions, subdivisions. ("UDC Consortium - About UDC". 2019. Udcc.Org. Accessed February 15 2019. <http://www.udcc.org/index.php/site/page?view=about>).

UDC, therefore, includes the following main classes:

- 0.0 Generalities. Science and knowledge. Organisation. Information. Documentation. Library science. Institutions. Publications.
- 0.1 Philosophy. Psychology.
- 0.2 Religion. Theology
- 0.3 Social sciences. Statistics. Politics. Economics. Trade. Law. Administration. Military art. Insurance. Education. Ethnography. Folklore.
- 0.4 Free.
- 0.5 Mathematics and natural sciences.
- 0.6 Applied sciences. Medicine. Technical.
- 0.7 Arts. Recreation. Entertainment. Sport.
- 0.8 Language. Linguistics. Literature.
- 0.9 Geography. Biography. History.

In a traditional library UDC is used to create the systematic catalogue and to arrange collections on shelves. In a computerised library it is used especially for organising the catalogue of open access collections, as also shelf access.

5.2.4 Indexing

It is a process of describing and expressing the content of a work with the help of some specific terms called descriptors.

Specific terms are studied in terms of their linguistic aspect (grammar and semantic form), scientific aspect, and frequency of use aspect, using specialised programs able to select, systematise and validate the use in the indexing process of only some terms that will become descriptors.

Until these programs emerged, this selection and validation effort was exclusively the work of some groups consisting of linguists and librarians specialised in processing certain sciences and subjects. Currently this task is generally committed to national bibliographic agencies (national libraries) or national centers for information and documentation.

All terms established this way create the indexing language, which is a classification language with a specific syntax. Principles and rules used to select and validate descriptors and also the rules of item and information indexing are the subject of some international standards developed in order to ensure unity and consistency to the information classification process.

The assembly of descriptors in a certain language represents an indexing instrument called thesaurus.

5.2.5 Thesaurus

Is a standard list of descriptors, alphabetically ordered, indicating semantic and logical relationships (hierarchical and associative).

Descriptors are unique accepted forms, therefore authoritative, and for this reason controlled vocabularies and thesauri are known in library-science literature as a list of authorities.

Thesaurus or list of authorities' functions:

- Ensures the control of descriptor's use at the level of content description;
- Allows the interrogation of an online catalogue (bibliographic database) in a natural language that the thesaurus translates into a classification language (allows also interrogation with excluded terms);
- Facilitates "navigation" within a search with specific and generic questions;
- Ensures completion of a search by investigations and on the associated term; and
- Ensures a good understanding and usage of each term by applied notes and explicative notes.

In indexing practice, several types of thesauri or list of authorities are known. The most well known and used are Library of Congress Subject Headings (LCSH), from Washington, United States of America, and the French version RAMEAU, which are monolingual thesauri or encyclopedic lists of authorities. (Holley 1986; Rameau 1991; Kao 1999; Library of Congress 1999)

Thesauri are multidisciplinary because they gather terms from all sciences and subjects. Due to their encyclopedic character, thus a large volume of systematised information, this type of thesaurus is developed in a single language.

Specialised thesauri came from information indexing necessitated by certain domains. These are developed by professional associations, research institutes, or international organisations, rather than national bibliographic agencies.

In order to facilitate international information and knowledge exchange, these specialised thesauri are sometimes multilingual.

It is ideal that users apply keywords in search strategies as descriptors used in the information processing.

Teaching Tips/Teaching Suggestion

Review of previous knowledge

The need for information and known search strategies will be defined. Homework will be checked, clarifying the incorrect aspects, if any, or other student dilemmas.

Warm-up

A police story is either created or quoted from a document illustrating the presence of a very vague described suspect. After reading/describing the problem situation, students will be asked to identify the suspect. The task will not be an easy one, as the given clues will be vague, unspecific, unclear. The possibility that although many seem to be suspects, the real culprit cannot be found can also be considered.

The didactic goal of this problematic situation is to rediscover the importance of details that allow the fitting of an aspect into a particular category. It will also highlight the need to build categories of things.

Below is an example of a story with a vague outlined subject. Have the participants guess the character's job.

Denisa says she does not like the uniform, but she likes the job she has. Some think it is a boring job, but not her. The job allows her to travel a lot, both in the country and abroad. She does not have to work many hours. She can only work for 20 min and then she must take a break of at least an hour. Before starting work, she is preparing for a long time. She spends a lot of time in the company of influential people or leading people in the country and abroad.

In some months, she gains enormous amounts of money, in other months she earns very little. This money fluctuation has her a little worried and does not allow her to assume buying a house because that would require a credit. She also says that

the job still has other financial disadvantages. For example, she has to pay for certain services that she does not use frequently, but she has to pay them monthly.

But it is a challenging job that does not bore her, but rather stimulates her to become better all the time. Another advantage of the job is that she can do something else while she does not have to work. She might even get a second job, but she still does not feel ready for this step now. It is a great joy for her because she can spend more time with her family and her two dogs.

After this moment, the topic to be addressed and the objectives of the course will be announced.

Teaching Activities

Game with types of information

The group of participants is divided into groups. The number of groups that will be set may vary depending on the number of participants. Students are given definitions of types of information, without examples.

It is recommended that the types of information made available are as diverse as possible. Students will be provided with both primary and secondary works. The necessary materials are: works of various types (such as: brochure, treatise, monograph, handbook, glossary, dictionary, map, atlas, album, symposia, report, shopping catalogue, leaflet, technical documentation, analytical bibliography, library catalogue, publication index, alphabetic index, analytic essay, or indicative essay), A3 cardboard, glue, markers, and scissors.

A competitive game with a time limit can be organised. The duration of the activity will be 15 min. The team that recognises and places most types of information correctly wins. Answer all questions before starting the game. All groups will be congratulated for involvement and applauded. After the game is finished, document placement errors in the related categories can be discussed. Through discussion of placement errors, the characteristics of the types of information will be discussed and inclusion in certain categories will be explained. Finally, list the types of information, giving as many examples as possible. Time would also be saved if a scheme with information types is already in place.

For teaching the item and information cataloguing section, participants can be divided into five groups. We can choose five colours, for example: red, yellow, blue, green, and purple. We can place the colour cards on five different tables. We will ask the participants to move to their preferred colour and form a group with the others who chose that colour. It is advisable to have a relatively equal number of members in each group. You can suggest, depending on the size of the group, the number of team members. The five coloured cards will have one of the following topics written on the back:

- Bibliographic description of item;
- Descriptive elements;

- Item classification;
- Indexing; or
- Thesaurus.

Envelopes will be prepared in advance for each group in which A4 sheets will be placed containing colour theme related information. In order for the task not to be too difficult, we can use the information in the theoretical summary of this chapter. If the group has certain characteristics, including a particular interest in IL, we can also prepare additional worksheets.

The task of the participants will be to write a letter/e-mail to a young user of up to ten years of age who wants additional information about the group's theme as he has a project to be completed at school on this subject. Each member of the group will assume a role from those given by the teacher: library director, librarian, IL expert, or secretary.

Participants are given 15–20 min to complete the task. All participants' questions can be answered. Also, the teacher will act as a consultant and resource person for each group, helping them where and when necessary. At the same time, the teacher will monitor the activity of the groups and track timing. At the end of the activity, the groups will appoint one representative to read the letter. All groups will be congratulated for understanding the information and the level of creativity shown and applauded for the work done. The teacher will thank the participants for their involvement and will announce that in a minute a review time will take place.

Review

The teacher together with the students will create a scheme, on a flipchart or board, containing a logical sequence of the knowledge acquired during the lesson. The activity has the role of imprinting on the minds of trainees the essential concepts, facilitating the learning of concepts from the lesson. The time set will be one minute. If writing these concepts takes too long, the scheme can be prepared before the course begins, and at the time of review, it can be brought into sight of the students and passed orally.

Also in this time, participants will be asked to express any concerns, blurs or dilemmas. The teacher will respond if time permits. If the time needed to respond is longer than the that available, a short answer will be given and a detailed explanation will be promised at the beginning of the next lesson.

Applications

- 1. Discover the cataloging system for public and university libraries. Write down what this system is and what the main features are.

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- 2. Identify the number of publications that one of the public or university libraries has in the classroom related to your field of study

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- 3. List the functions of a thesaurus, or list of authorities

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Evaluation

How did you feel today?	
What did you learn today?	
What would you like to discover?	
What were your strengths today?	
What aspects do you think you should improve in your work?	
Did you get involved in teamwork?	
What was the value added by you to the team?	

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Information Search Strategies

6

Abstract

After completing this learning unit, you will be able to:

- Identify types of catalogues;
- Differentiate sources of information;
- Argue the need for cataloging.

Keywords

Library catalogues • Information sources • Classification

6.1 Traditional Library Catalogues

- Represent lists of name, concepts or objects, recorded on different information carriers, arranged according to certain classification schemes and serving information purposes (Fig. 6.1);
- Offer information concerning the contents of an information centre:
 - Works of a certain author; and
 - Works referring to a certain subject

Types of catalogues:

- Alphabetical catalogue on authors' names and titles: groups bibliographical descriptions of primary and secondary works in general alphabetical order of authors' names and of titles for works with more than three authors;
- Systematic catalogue: groups bibliographical descriptions of primary and secondary works according to a systematic classification scheme.

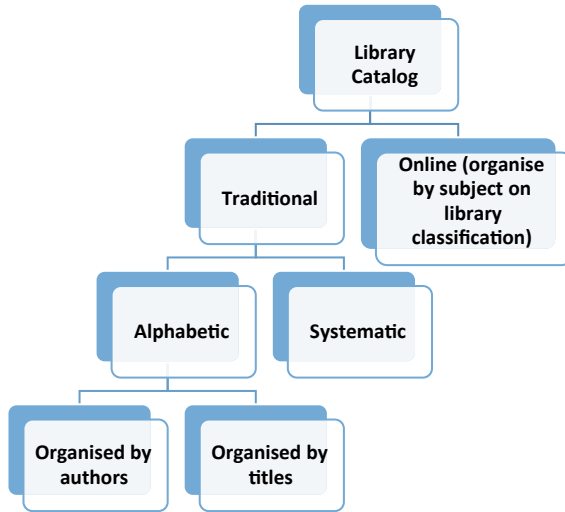


Fig. 6.1 Library catalogues classification



Fig. 6.2 Traditional card catalogue

Traditional catalogues are catalogues of cards with bibliographical descriptions (Fig. 6.2).

Cases of information sources in a traditional catalogue:

Case A: user knows author, but does not know the title of the desired work

- Uses alphabetic catalogue of authors' names;
- Looks within the catalogue until he finds the desired author;
- Writes down the location identification details; and
- Goes to the identified location to find the desired work.

Case B: user knows the domain of the desired publication, but does not know the author

- Uses the systematic catalogue, where UDC class identifies the searched domain;
- Looks within the respective file until he identifies the desired publication;
- Writes down the source identification details; and
- Goes to the identified location to find the desired work.

Example of research in traditional library

Research theme: forestry.

Understanding the concept

- Search in dictionaries or encyclopedias with definition term *forestry*.

Establishing keywords

Definitions of forestry generate several keywords including:

- Forestry;
- Forest cultivation;
- Forest arrangement;
- Forest exploitation;
- Forest protection; and
- Forest.

Identification of information sources

In traditional alphabetic and systematic catalogues, there are two types of information sources:

- Printed:
 - Atlases;
 - Dictionaries;
 - Encyclopedias;
 - Books;
 - Brochures; and
 - Journals.
- Non-printed:
 - Audio/video records; and
 - Databases (collections of information stored to be accessed by computer).

Case A: user knows the author, but does not know the title of the desired work

- Uses alphabetic catalogue of the file, according to author's names;
- Looks within the respective file until he identifies the desired author;
- Writes down the identification details for location on the library shelf; and
- Goes to the identified location and finds the desired work;
- User looks for a work written by Iosif Leahu, but does not know the title;
- Looks in alphabetic catalogue for letter L;
- Within the letter L records, he browses the cards until he identifies the required author: Leahu;
- Writes down the identification details for location on the library shelf; and
- Goes to the identified location to find the desired information, namely the book *Amenajarea Pădurilor*.

Case B: user knows the work domain but does not know the author

- Uses the systematic catalogue, where at the appropriate class he will find the desired domain;
- Looks within the respective file until he identifies the required work;
- Writes down the identification details for location on the library shelf; and
- Goes to the identified location and finds the desired information.

User looks for a publication in the Forestry domain, namely *Amenajarea pădurilor*, but does not know its author:

- Looks in the systematic catalogue (on human knowledge domains) where at class **63** he will find the desired domain, respectively Forestry;
- Looks through the respective file until he identifies the required work: *Amenajarea pădurilor*;
- Writes down the identification details for location on the library shelf; and
- Goes to the identified source to find the desired information.

6.1.1 Search Information on Internet

Search Engines for Academic Use:

Search engines are maintained by computer programs, with minimal human intervention. Search engines search a wider range of web sites than directories, but there are fewer quality-control mechanisms (Libguides.utoledo.edu. 2019).

- Google—includes a directory and access to Usenet;
- Google Scholar—focuses on retrieving scholarly literature and academic resources;

- Lycos;
- 360 Daily (video searching);
- RefSeek—Academic Search Engine; and
- Yahoo! Search.

6.1.2 MetaSearch Tools

Metasearch tools search the other search tools ... one-stop-searching the web.

- Dogpile; and
- Ixquick.

More information about search tools and how they work:

- Search Engine Show-Down—information on search engine features, technical analyses, search strategies, reviews, and more; and
- Search Engine Watch—information for web searchers and web designers about how search engines work (Libguides.utoledo.edu. 2019).

Libguides.utoledo.edu. (2019). *LibGuides: The Internet and the World Wide Web: Home*. [online] Available at: <https://libguides.utoledo.edu/internet> [Accessed 5 Feb. 2019].

Google search tips: (Libguides.mit.edu. 2019).

- **Searches are not case sensitive.**
 - Keywords may be entered in lower or upper case or a combination of both.
Exception: Boolean operator **OR**
- **Word order matters.**
 - Google ranks the first word slightly higher than the second, the second slightly more than the third, etc.
- **Google ignores most punctuation and symbols. Exceptions:**
 - Dollar sign when used to indicate price;
 - Underscore or hyphen when used to connect words; and
 - Symbols when used to convey meaning such as a programming language (C ++), and musical terms (G#) (Libguides.mit.edu. 2019).

- **Google uses automatic word stemming.**

- Google does not allow wildcards to be used for variable ends of words.

Instead, Google searches for all possible word variations (Libguides.mit.edu. 2019).

Suggested Teaching

Warm-up

Every course begins with a short organisational time. In this activity, greet the students, invite them to the classroom, find out the number of absences, possibly the reasons they could not reach the class. Following this step, to capture of attention, you can use a game in order to thaw the atmosphere, to facilitate a dynamic group which will be beneficial to the next activity.

Share paper sheets to the participants. Ask students to recall a game familiar from their childhood. Then, they will each write his own name on his note and two true things about his own person and a false one. The teacher will collect all the notes and read them out loud, and the participants will guess which are the true and false claims. Group members have the opportunity to discover how well they know each other and amuse at the same time.

Review of previous knowledge

Concepts such as: *document types, information cataloguing elements, indexing, classification, thesaurus* will be briefly defined and described. The outstanding questions from the previous lesson will be answered and/or suggestions will be made to find the answers. Homework will be checked, clarifying incorrect aspects, if any, or other student queries.

Teaching activities

The starting point of this lesson can be the first application in the previous chapter, namely: *Discover the cataloging system for public and university libraries. Write down what this system is and what the main features are.*

If building an application was the homework, checking it will be a good introductory time. If not, students will be asked to access the sites of named institutions to discover information about the cataloging systems.

Students will be asked what are the reasons for making catalogues. They will also be asked to name a few of the advantages of cataloging. An operational definition of the library catalogue will be built. The schema *Library catalogues classification* will be explained and types of existing catalogues. It is recommended

that the schema is already printed and placed in a visible place for the whole group to see. If this is not possible, it can be constructed by drawing on the whiteboard or a flip chart, in conjunction with the explanations given.

In the next activity of the lesson, participants will be divided into two subgroups. Each of the two subgroups has precise and complementary tasks. One group will take over case A, which was shared in the summary that relates to this chapter, while the second group will have as a task case B. Members will be encouraged to cooperate and to share roles in order to solve the tasks quickly and effectively. At the end of the activity, both groups will be congratulated for their involvement and manner of solving the task.

After completing the tasks, participants will receive a new task, which they will do individually. The teacher will prepare, prior to the commencement of the course, a number of cards, which will have an approximate equal number, depending on the number of participants in the group. On half of them the teacher will write the letter A, and on the other half he will write the letter B. These letters will correspond to the two cases from the summary described above.

The teacher will ask each participant to choose a card from the box prepared and he will explain that the two letters correspond to the two previously demonstrated situations. Each participant will have total freedom in choosing the subject of research and alone will follow the approach that was demonstrated within the team.

Review

Students will reform into the two groups formed at the beginning of the course. Each group will create a mind-map, on A3 paper sheets, with the most important elements, concepts discussed during the course. Participants will have a maximum of five minutes for this activity. As we have emphasised in previous activities, this part of the course has the role of imprinting on the students' minds essential concepts, facilitating the learning of the concepts from the lesson.

Applications

Find research that comes under your sphere of interest or an author or multiple authors who have written relevant papers in your research project area. Try searching for information about them.

Find the most cited articles in your studied field. Also, rank the work of the author you are looking for, depending on the number of citations it has.

Evaluation

1. Which of information sources listed below are printed? Mark the correct answers.

- Atlases;
- Databases;
- Encyclopedias;
- Audio records;
- Dictionaries;
- Video records;
- Brochures.

2. Define traditional library catalogues.

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3. How are online catalogues organised?

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4. Define an alphabetical catalogue.

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Webography

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Abstract

After completing this learning unit, you will be able to:

- Identify the comparison criteria of information sources;
- Compare the quality level of different types of informing; and
- Evaluate different bibliometric databases.

Keywords

Sources evaluation • Quality of information • Peer review • Bibliometric databases • Impact factor • Hirsh index • CRAAP test

Why is it important to evaluate resources?

Along with accessing, searching, and finding information, evaluating that information is vital.

When you research, you want to find the best information to support your ideas. This requires careful consideration of the information you find.

There are some key questions one should take into account:

- Is it a scholarly source and a peer review process is evident?
- Is this a primary, secondary, or tertiary source?
- Is this source current, or is the information it presents outdated?
- Is this source based on solid academic background research?
- Do you detect that the information in this source is biased?

Given the dramatic increase in the amount of scientific information, tools for assessing the quality of information have been created. We will present two kinds of scientific information: that, published in journals and that found in web resources.

7.1 Evaluation of Scientific Series Publications (Journals)

The scientific community around the world considers serial publications as the:

- Main means of scientific communication;
- Main documentation base; and
- Means of assessing scientific research.

Database makers are the publishers of serial publications, but also information intermediaries buying copyrights of the journals, organising them in a system and selling them as new information products. These are called databases (Biagioli 2002).

7.2 Peer Review Process

Peer-review (also known as refereeing) is the process journal editors use to ensure that the articles they publish meet standards of good scholarship. Academic papers (Table 7.1)

Journal articles, research papers and such like are examined by a panel of other scholars in the field (the author's peers). The panel may decide to accept the paper, recommend revision or reject it completely.

Any resource that passes the peer-review process can be considered to have the highest level of academic credibility—although of course you still need to consider other elements such as age, and relevance. Not all journals use peer-review. Some lecturers may specify that only peer reviewed resources are to be used in assignments. Some databases allow you to narrow your search to return only peer-reviewed results. Unfortunately this process differs from database to database. Sometimes this is as easy as simply ticking a box that says “Peer-reviewed”.

This table outlines many of their distinguishing characteristics (Fig. 7.1):

7.3 Bibliometric Databases

The most widely used bibliometric databases are: Web of Science (WoS) (1970) and Scopus (2000)—payable (through subscription); Google Scholar—Free.

They are called “bibliometric” because they index all bibliographic references and may be used to calculate a citations index.

WoS includes five databases: Science Citation Index Expanded (SCI-EXPANDED); Social Sciences Citation Index (SSCI); Arts and Humanities Citation Index (A and HCI); Conference Proceedings Citation Index-Science (CPCI-S); and Conference Proceedings Citation Index-Social Science and Humanities (CPCI-SSH). Books and a large variety of journals are not included in the WoS.

Table 7.1 Evaluate sources: evaluating articles (Libguides.uleth.ca. 2019)

	Scholarly journal	Trade journal	Popular magazine
Title	Descriptive and precise. The words “Journal”, “Transactions”, “Proceedings”, or “Quarterly” often appear in the title	Descriptive. Usually identify a particular industry or area of interest (e.g. “Architect’s Journal,” “Chemical and Engineering News”)	Less descriptive than trade or scholarly journal titles. May not indicate the magazine’s focus or intended audience
Author	Professors and other researchers who are considered to be authorities in their field of study	Professional journalists, freelance writers, or working professionals who are knowledgeable about a specific trade, profession, or industry	Professional journalists, freelance writers, or staff writers who often lack specialised training in the field in which they are reporting
Editor	Peer review process	No peer review; editors work for publisher	No peer review; editors work for publisher
Publisher	Scholarly organisations, professional societies, university presses	Professional societies, trade organisations	Commercial (for-profit) publishers
Audience	Scholars, researchers, and students with specialised knowledge of a particular field	Members of a particular industry, trade, or profession	The general public
Purpose	To report on original research; to provide in-depth, specialised information on a narrow topic; to facilitate communication between scholars	To provide practical information to industry professionals; to report on industry trends; to facilitate communication between working professionals	To provide general information; to express public opinion; to entertain the general public
Publication schedule and volume/issue numbering	Generally published monthly, bi-monthly, quarterly, semi-annually, or annually Volume and issue numbers are important to note for your citations	Publication schedules vary Record the date of publication and volume number for your citations	Often published weekly or monthly Record the date of publication and volume number for your citations
Writing style	Written in formal language. May contain academic jargon or technical terms	May contain industry-specific jargon or technical terms	Informal writing style; accessible to a wide audience
Bibliography	All references are carefully cited. Bibliographies are always present at the end of the article and can be very long (e.g., several pages of citations)	May include a short bibliography	Citations are not usually provided; the reader may have no way of verifying the information cited in the article

	Questions to ask:
Accuracy	<ul style="list-style-type: none"> • Is the information reliable? • Is the information error-free? • Is the information based on proven facts? • Can the information be verified against other reliable sources?
Authority	<ul style="list-style-type: none"> • Who is the author? • Does he or she have the qualifications to speak/write on that topic? • Is the author affiliated with a reputable university or organization in this subject field?
Objectivity	<ul style="list-style-type: none"> • What is the intended purpose of the information? • Is the information facts or opinions? • Is the information biased?
Currency	<ul style="list-style-type: none"> • When was the information published? • Is the information current or out-dated? • Does currency matter in this topic?
Coverage	<ul style="list-style-type: none"> • Does the information covered meet your information needs? • Does it provide basic or in depth coverage?

Fig. 7.1 Literature review—finding the resources: evaluating sources (Libguides.library.cityu.edu.hk. 2019a, b)

SCImago Journal and Country Rank is a portal that presents the visibility of scientific journals; it includes indicators on the scientific development of countries. These indicators are generated by the Scopus database and show the visibility of the journals included in the 1996 database. The portal is developed by SCImago, a research group in Spain (Scimagojr.com 2018).

Publish and Perish (Harzing 2007) is free software that enables you to perform bibliometric analyses in Google Scholar and Microsoft Academic, <https://academic.microsoft.com/>.

Download from the page: <https://harzing.com/resources/publish-or-perish>.

The results obtained from the three databases can be very close, although only the publications included in that database are taken into account.

7.4 Clarivate Analytucs—WoS

7.4.1 Impact Factor

Impact factor, or Journal Impact Factor, is a measure of the frequency with which the “average article” published in a given scholarly journal has been cited in a particular year or period and is often used to measure or describe the importance of a particular journal to its field.

Impact factor was originally developed by Eugene Garfield, the founder of Institute of Scientific Information, which is now a part of Clarivate Analytics.

Journal Impact Factor can be found in the Journal Citation Reports or the JCR, as it is commonly known (Libguides.exeter.ac.uk. 2019).

Journal Impact Factors are the measure of the frequency with which the average article in a journal has been cited in a particular year.

For example, the Journal Impact Factor for a journal in 2015 is calculated by taking the number of citations made in 2015 to the articles published in the journal in 2013 and 2014 and then divided by the total number of articles published in that journal in 2013 and 2014.

Impact Factors are:

- Used to measure the importance or rank of a journal by calculating the times its articles are cited; and
- A quantitative tool for evaluating the relative importance of a journal.

7.4.2 LibGuides: Journal Impact Factors: Home

Libguides.exeter.ac.uk. (2019). *LibGuides: Journal Impact Factors: Home*. [online] Available at: <https://libguides.exeter.ac.uk/journalimpactfactors> [Accessed 5 Feb. 2019].

7.4.3 H-index, HIRSH Index

The H-index is the largest number of articles per author, with at least one of them (Hirsh 2005).

Methods of calculation:

Automatic: the bibliometric platforms Web of Science and Scopus, and “Publish or Perish” software for Google Scholar.

7.5 Conclusion

The consequences of applying this bibliometric indicator may, depending on the context, be beneficial or, on the contrary, destructive.

Eugene Garfield concluded in (2005) on how its application: “Like nuclear power, the impact factor is a mixed blessing. I expected it to be used in a constructive way, but I admit at the same time that in the wrong hands it can be abusive.”

7.6 Web Resources Evaluation

Along with accessing, searching, and finding information, evaluating that information is vital. You can use the **CRAAP Test** to ask questions about websites, books or articles.

The **Search Tips** page suggests ways to limit your searches to reliable sources (Fig. 7.2).

Top-level domain tells you from what type of institution the information comes (Libguides.library.cityu.edu.hk 2019a, b):

- **.com**—a commercial site (may be trying to sell a product)
- **.edu**—an educational institution (usually reliable but may not if it is a personal web page of a member of the institution)
- **.gov**—a government department or agent
- **.net**—network access provider
- **.org**—a non-profit organisation (may or may not be biased).

C	Currency: The timeliness of the info
R	Relevance: How the info fits your needs
A	Authority: The source of the info
A	Accuracy: Reliability and correctness of the info
P	Purpose: The reason the info exists

Fig. 7.2 CRAAP test (Google CRAAP test 2019)

Message for Group 3.

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Message for Group 4.

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The consequences of applying this bibliometric indicator may, depending on the context, be beneficial or, on the contrary, destructive. Eugene Garfield concluded in (2005) on its application: “Like nuclear power, the impact factor is a mixed blessing. I expected it to be used in a constructive way, but I admit at the same time that in the wrong hands it can be abusive.”

Message Code:

A	¥	N	Π
Ã	Û	O	ð
Â	Y	P	□
B	ð	Q	‡
C	8	R	£
D	Q	S	2
E	o	§	□
F	Ξ	T	□
G	Ω	‡	□
H	□	U	□
I	ξ	V	ç
Î	ç	W	H
J	Γ	X	Σ
K	A	Y	Û
L	X	Z	Θ
M	Jb		

After they decipher the messages and present their message to the other groups, students will try through discovery learning to find connections between the messages and make inferences about the next lesson.

Review of previous knowledge

Concepts such as: *Library catalogues; information sources; classification* will be briefly defined and described. The teacher will ask students to make connections between these concepts and the messages of the wise men.

Teaching activities

Through a heuristic conversation, the teacher will guide the students' activity to discover the curricular content of the lesson.

To compare three types of journals (**Scholarly Journal, Trade Journal, and Popular Magazine**), the teacher will divide students into three groups. Groups will receive worksheets that will contain the comparative table structure and analysis criteria. A group will receive information about the three types of journals in sophisticated and complex language, another group will receive written material in a more accessible manner, from an Information Literacy manual, and the third group will use the Internet as a source of information.

After completion of the tasks, students' results will be compared and difficult elements will be discussed. A metaphor will be used as a pedagogical approach to understanding the content of the learning unit.

To make the transition to the next sequence of the lesson, in which the criteria for evaluating sources of information will be discussed, the next exercise will be done. Students will be asked to draw a glove as beautifully as possible. Students will not be rushed in drawing. After each student finishes, they are asked to draw as many gloves as they can, as similar they can, on a new sheet of paper. The task will have a time limit of 45 s. The two products of each student will be compared, using criteria such as: aesthetic, number of products (gloves), and clarity. Analogy with sources of information will be made and the advantages and disadvantages of the main types of information will be discussed. The teacher together with the students will develop criteria to evaluate the sources of information and will analyse, according to these criteria, some sources of information. Further, by lecturing, the teacher will teach the content task related to bibliometric databases.

Review

Students will compare types of information depending on the type of electronic information source (**.com, .edu, .gov, .net, or .org**).

Applications

Each student will choose a relatively common illness/affection and will seek methods and treatment schemes using different sources of information.

They will compare the results obtained from research and compare the degree of congruence between the information found.

Evaluation

	A	B	C	D
1. What do you use to find out what documents the library has?	<input type="checkbox"/> Bibliography	<input type="checkbox"/> An index	<input type="checkbox"/> Directory	<input type="checkbox"/> Libraries OPAC - Catalogue
2. What is the best definition of "information literacy"?	<input type="checkbox"/> Ability to find relevant information	<input type="checkbox"/> Ability to read	<input type="checkbox"/> Ability to use the computer	<input type="checkbox"/> Ability to write
3. What are the primary sources?	<input type="checkbox"/> Academic	<input type="checkbox"/> First-hand proof	<input type="checkbox"/> Biographies	<input type="checkbox"/> Articles
4. Which situations are not reference collections in libraries?	<input type="checkbox"/> Encyclopedias and dictionaries	<input type="checkbox"/> Resources to define concepts	<input type="checkbox"/> Books that can not borrow	<input type="checkbox"/> Used to define the subject
5. To which data base Transilvania University has no subscription?	<input type="checkbox"/> Scopus	<input type="checkbox"/> Science Direct	<input type="checkbox"/> Web of Science	<input type="checkbox"/> ClinicalKey
6. Which are not Boolean Operators?	<input type="checkbox"/> AND	<input type="checkbox"/> NOT	<input type="checkbox"/> OR	<input type="checkbox"/> Asterisks (*)
7. To find more documents, how do we include synonyms?	<input type="checkbox"/> Using AND	<input type="checkbox"/> Using + sign	<input type="checkbox"/> Using OR	<input type="checkbox"/> Using NOT
8. Wildcard - Truncation. Which sign is Wildcard?	<input type="checkbox"/> *	<input type="checkbox"/> @	<input type="checkbox"/> =	<input type="checkbox"/> ?
9. What is NOT important when quoting and writing references?	<input type="checkbox"/> Granting other readers access to the source	<input type="checkbox"/> Recognizing the work of others	<input type="checkbox"/> Finding materials on the shelf	<input type="checkbox"/> Avoiding plagiarism accusation
10. Summary of an article is:	<input type="checkbox"/> full text	<input type="checkbox"/> information about how to find the article	<input type="checkbox"/> abstract	<input type="checkbox"/> article references
11. If you are told not to use the Internet you DO NOT use?	<input type="checkbox"/> OPAC	<input type="checkbox"/> Databases	<input type="checkbox"/> Google	<input type="checkbox"/> Nothing
12. "Treatment of cancer". Search strategy for a minimum number of documents?	<input type="checkbox"/> Cancer AND depression	<input type="checkbox"/> Cancer OR Depression OR antidepressants	<input type="checkbox"/> Cancer AND Depression AND antidepressants	<input type="checkbox"/> Cancer

13. To find the latest information on drug abuse, you should consult:	<input type="checkbox"/> A book	<input type="checkbox"/> A journal	<input type="checkbox"/> An encyclopedia	<input type="checkbox"/> A thesaurus
14. Using Google, you will NOT find:	<input type="checkbox"/> Sales catalogs	<input type="checkbox"/> Biographical information about famous people	<input type="checkbox"/> Books available from the library	<input type="checkbox"/> Information about companies
15. Which Internet domain is not correct?	<input type="checkbox"/> .edu = educational institutions	<input type="checkbox"/> .org = non-profit organizations	<input type="checkbox"/> .gov = government organizations	<input type="checkbox"/> .mil = million dollar organizations
16. To paraphrase you must:	<input type="checkbox"/> Change a few words and quote as if it belongs to you	<input type="checkbox"/> Put quotation marks and citations	<input type="checkbox"/> Use the idea without quoting	<input type="checkbox"/> Summarize the text with your words and quote

Correct answers: 1D, 2A, 3B, 4C, 5D, 6D, 7C, 8D, 9C, 10C, 11C, 12C, 13B, 14C, 15D, 16 D

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Abstract

After completing this learning unit, you will be able to:

- Identify the requirements for the use and organisation of information;
- Compare different types of citation;
- Analyse different ways of building the bibliography; and
- Identify different identification elements according to international publishing codes.

Keywords

Information management • Citation types • Publishing codes

Summary

Information management means using information obtained during a documentation process with the help of standards of ethical use of information and also computerised systems for preserving information regarding the sources used and for an automatic generating of references.

The third component of Information Literacy is **information use and communication**.

In information using and communication, several requirements should be fulfilled, as shown in detail in Fig. 8.1.

Information use

- To find new ways in transmitting, presenting and using information
- To use the retrieved information
- To personalize the retrieved information
- To present the new informational product

Communication and ethical use of information

- To understand the ethical aspect in using information
- To respect legal provisions concerning the information use
- To respect intellectual property
- To use standards for references

Fig. 8.1 Information use

8.1 Using Information in the Research Process

8.1.1 Role of Citation Process

Citations and references are mandatory elements for any scientific paper. A citation represents the most effective way of establishing a relationship between current scientific ideas and the previous ones, by means of which the relevance of an author's work on a certain topic is appreciated and publicly recognised. By citation, the copyright requirements are observed, avoiding plagiarism, which is considered a violation of an author's professional ethics.

Any scientific paper involves citations based upon the scientific literature. Use of references in scientific papers is a part of academic code of behaviour.

References are bibliographic information about each quote or borrowed idea mentioned within the text of a paper, required to identify and retrieve the referenced work and check the accuracy of citation. A list of citations is usually found at the end of a scientific paper.

Using references is useful for fulfilling the following requirements:

- Proof of adherence to academic writing standards;
- Respecting the work of other researchers (avoiding plagiarism);
- Offering proofs regarding consideration and analysis of relevant literature;
- Validation and acknowledgment of sources used in the paper; and
- Proofing the work's credibility.

References are used in the following situations:

Another person is cited word by word using quotation marks (direct citation). It does not matter if it concerns a phrase, sentence or paragraph, the reference of the source must be given;

A citation is done by paraphrasing or summarising the ideas or data obtained from other sources;

Use of statistics obtained from other sources in the paper;

Use of tables, figures, diagrams or images created by someone else;

Use of controversial facts, opinions or data from other sources;

Information of general nature, and generally recognised facts should not be listed in the references (for example the years of the Second World War).

One needs to know the rules for creating a bibliographic description in the following situations:

Compiling a list of references on a requested topic;

Correct indication of the sources used in writing an essay, report, communication, undergraduate thesis, or year dissertation.

References became a very important tool in studying science itself and are used to investigate information flow. The number of citations is an indicator of a publication's quality and the scientific level of researchers work. An analysis of citations represents one of the scientometric/bibliometric research methods. The impact of a journal is measured by its number of citations in published articles. The higher the number of citations then the higher the number of persons using it as an information source and so its value for the topic.

8.1.2 Principles of Describing Information Sources

Before citing sources in a scientific paper, the researcher should know some descriptive principles related to citation: (Standardisation 1996)

- Bibliographic elements are extracted from the title page or the page equivalent to it (such as verso of title page, printing box, audio recording label);
- Bibliographic elements are recorded in the original language as they appear in the source;
- For non-Latin characters (Cyrillic, Arabic, Japanese or Chinese) transliteration is required according to international standards;
- Bibliographic elements are separated by a coherent punctuation system: period, comma, or colon;
- The author of a cited paper should be written in the following order: name, surname;

- For two-three authors of a paper, their name should be separated by semicolon and space;
- For more than three authors, the abbreviation [et al.] is used after the first author;
- If the author of an information source is anonymous then the source title is the input element for the reference;
- The input element of a reference (author or information source title) should be distinctly marked in comparison to the other bibliographic elements (using bold characters, italics or underlined);
- The sub-title of an information source will be mentioned after the title using a colon and space;
- Additional information or spelling errors may be marked within square brackets after the changed bibliographic element;
- The transliterated form of an information source title can be used instead the original form or within parentheses after it;
- For unknown publishing dates there are standard expressions: [s.l.], for unknown publishing location, [s.n.], for unknown editor's name or [s.a.], for unknown publishing date;
- For information sources that are to be published, one may use the expression "publication in progress", while for the those not yet published, the expression "unpublished manuscript";
- For electronic information sources, whose bibliographic data is not complete, alternative information sources should be used; and
- The order of references may be alphabetical (for references), according to the input element or numerical (list of references), following the order of citations as referenced in the text.

8.1.3 Citation Methods

SR ISO 690:1996 standard indicates two citation methods of information sources: numerical citation method (or Vancouver style) and the method of citing the first element and the publication date (or Harvard style).

8.1.3.1 Numerical Citation Method (Vancouver Style)

This method refers to a counting system that uses numbers, inserted into the content of a scientific work, between parentheses or in exponent form.

When notation in parentheses is used, the numbers inside them will be associated to the information sources in the references list, numerically ordered. Endnotes are the implementation solution of this method.

When exponent notation is used (Fig. 3.2), the inserted numbers will indicate the cited information sources, placed in a footnote at the bottom of the page. Footnotes or chapter endnotes are the implementation solution for this method.

In order to better understand the insertion of endnotes or footnotes, the researcher working on a scientific paper should be aware of some basic principles:

- If an information source is cited several times, a different number will be allocated to a note for each citation;
- A note can be used to cite either one information source or several information sources for the same referenced idea; (Ursachi and Scutelnicu 2011); and
- A note referring to a previous cited document should include either the entire citation or the number of the previous note followed by the page number (citation location).

In order to avoid repetition of some elements of bibliographic description, the following terms of Latin origin, standardised abbreviations, are used in citations:

- **Apud(apud)** = “**quote after**” Indicates a quote taken not from the original source but from another work citing it. The term “Apud” will be placed at the beginning of the quote, also indicating the loan source.
- **Ibid. (Ibidem)** = “**In the same paper**” or “**Also there**” In the immediate succession of citations, the text of the repeated quote is omitted, being replaced by the Latin term **Ibidem**, short form **ibid.** or even **ib.**, written in italicised characters. This allows avoiding successive repetition of same citation.

In repeated quoting of another page of the same source, the page number is added to the word “Ibidem”; in a repeated citation in a volume, the volume number is added to the word “Ibidem”.

- **Id. (Idem)** = “**Same**” (**about the author**). In the immediate succession of citations of different papers belonging to the same author, the term **Idem** or **Id.** will be used written in italics.
- When the same study of an author is cited several times in the paper, but not successively, the first citation is made completely, then afterwards the Latin term **opus citatum**, is used, short form: **op. cit.**, in italics, or underlined. In order to retrieve the reference of “op. cit.”, the previous notes or the general section of references will be reviewed, looking for the first citation of the author.

For a repeated quote on another page, the page number will be added to “op. cit.”; for the repeated citation in another volume (part, edition), the volume number is added to “op. cit.”.

- **contra** = “**contra**”. The reference is made to papers embracing opposing ideas or theses to the ones supported by the author in his paper.

8.1.3.2 Citation of the First Element and Publishing Date Method (Harvard Style)

If the author's name is mentioned in the text, then the date of publication will be inserted within parentheses. Otherwise, both bibliographic elements are written within parentheses.

The page number may also be added (from where the quote was taken) after the date of publication.

In the case of several documents with the same author and same publishing date, letters may be used additionally in order to distinguish between information sources.

8.2 Citation Styles

Citation of information sources in a scientific paper should be done in a standard form. This standard form is given by the citation style of the paper's publisher. Usually, the citation style is imposed by the editor, such as publishing in a volume of a scientific conference. Also, the selected citation style depends on the research topics (domain).

Standards or international requirements to work uniformly regarding citing references, do not exclude a certain variety in citation formats and styles in editorial practice.

ISO 690:2010 develops general rules for presenting references in all fields of science.

There are a multitude of handbooks and instruction guides, models and citation examples in text or lists of references. Broadly, there are three systems of citation.

8.2.1 "Author-Date" System (Harvard System)

In the text, the author's name and year of publication (number of pages if necessary) are presented between parentheses. Full references appear in alphabetical order in a list at the end of the paper.

The "Harvard system" designates a style referencing quotes in a text by the "author-date" method and it is based on *Recommendations for citing and referencing published material* developed by British Standards Institution (BSI). ISO 690:2010 uses this format as well as the American Chemistry Association (ACS), American Psychology Association (APA), Chicago University with Chicago and Turabian styles, also the Council of Science Editors (CSE). Universities use the general principles of the system to develop their own guides. The benefit of this system is given by the identification of an author's paper using a direct method. Unlike the Vancouver system, the "author-date" system does not cause trouble while renumbering references, in case the citation order is changed within the text.

The main disadvantage of this system is the need of more space within the body of text and the possible distraction in case of multiple citations made at the same place.

8.2.2 “Author-Title”/“Author-Page” Style

It was developed for Arts and Humanities, where the paper’s title and pages are more important in a citation than the publication date. This information allows analytical researchers to easily follow exact phrases in the text analysis process. A short title is required only when there are several works written by the same author. Modern Languages Association of America (MLA) prefers this format.

8.2.3 Sequential Number System or “Author-Number” (Vancouver System)

Citations are consecutively numbered (using Arabic numbers in parentheses or superscripts) according to the order of appearance in a text. In the several cited references, the first number assigned is maintained and a page number is indicated only if necessary. Complete citations, numbered in order of appearance in the text, are presented in a list at the end of the paper. An advantage of the Vancouver system is including numbers that do not interrupt the text flow. The main disadvantage of the system is that in the process of editing a paper, a reference added later will require renumbering citations in the text and in the references list, in this case increasing the risk of error.

8.2.4 References in a Notes System

Footnotes or endnotes include the bibliographic description of the source, being consecutively numbered in text (by Arabic numbers between parentheses or as superscripts). Complete references are arranged in alphabetical order in a list (bibliography) at the end of the paper.

Bibliographic notes are mainly used in the field of historical research and represent an alternative to citation in text. A disadvantage is that footnotes are often too expensive for editorial reproduction. Long notes may distract readers.

In case no citation standard is imposed, then it is mandatory to use the Romanian standard ISO 690:2010.

Regardless of the citation style, as a principle, the reference includes the same bibliographic elements, but the architecture may be different.

References can be organised in two different ways:

- *References list*—is a list of information sources cited in a scientific paper, numerically organised, in order of appearance in text; or

- *Bibliography*—is an extended list of information sources that were consulted, and not necessarily cited, alphabetically organised according to the author’s name or source’s title (Ruskin University 2011).

8.2.5 Citation “Anatomy”

The term: “citation anatomy” was defined in the *Library Workshop Manual: Sect. 4*, published by Davis Schwartz Memorial Library (Davis Schwartz Memorial, 2011).

This section of the material related to the citation process is focused on the description of mandatory bibliographic elements, for the most used information sources.

The formats and examples are presented and illustrated both for printed and electronic sources, published or unpublished.

Standards used for this section are: SR ISO 690:1996 for printed information sources, SR ISO 690:1997 for electronic information sources and the Harvard style for unpublished information sources.

8.2.5.1 Printed Information Sources

Printed book. Technical report. Ph.D. thesis

Author of book. *Title of book*. Edition. Publishing place: Publishing house, year. ISBN.

Printed book chapter

Author of chapter. Title of chapter. In: Author of book. *Title of book*. Publishing place: Publishing house, year, chapter pages.

Printed journal

Title of journal. Author/editor. Edition. Fascicle (year and/or number). Publishing place: Publishing house, year. ISSN.

Article in printed journal

Article’s author(s). Title of article. In: *Title of journal*, year, volume, number, article pages.

Standard

Organisation name. Standard number: year. *Title of standard*. Publishing place: Publishing house, year.

Pattern

Name of applicant. *Title of pattern*. Country or office, pattern type, number. Publishing date.

Paper in a conference

Author(s) of paper. Entire title of paper. In: Publisher/organiser's name, *Complete title of conference*. Location (town, country), conference dates. Publishing place: Publishing house, year.

Legislation document

Jurisdiction (country, institution). Title of legislation document (document type, number, day and month, official title of law). In: *Title of publication*, publication date, number, pages of legislation document.

8.2.5.2 Electronic Information Sources

Electronic book

Author(s) of book. *Title of book* [support]. Publishing place: Publishing house, year [accessing date]. Availability and accessibility.

Chapter in electronic book

Author(s) of chapter. Title of chapter. In: Author(s) of book. *Title of book* [online]. Publishing place: Publishing house, year [accessing date]. Location. Availability and accessibility.

Electronic journal

Title of journal [online]. Edition. Publishing place: Publishing place, year [accessing date]. Availability and accessibility.

Article in electronic journal

Author(s) of article. Title of article. *Title of electronic journal* [online]. Year, volume (publication number) [accessing date]. Article pages. Availability and accessibility.

Forums

Forum title [online]. Publishing place: Publishing house, publishing date [accessing date]. Availability and accessibility.

Electronic messages (e-mail)

Sender's name. *Title of message* [online]. Recipient's name. Date of sending (including time) [access date]. Availability and accessibility.

8.2.5.3 Other Information Sources

If other information sources are used in developing a scientific paper, this aspect should be recognised and sources must be mentioned as references.

As an example, if an investigation is the result of cooperation with other experts or institutions/centres/research laboratories, then this situation should be recognised.

Harvard style includes citation of situations such as information coming from information sources that are: unpublished or in process of publication; oral or personal information; or comments on personal blogs, online video transmissions.

8.2.5.4 Unpublished Information Sources

Author, year. *Title of paper*. Unpublished manuscript/manuscript submitted for publication.

SPUD, I. H. *Contrastive analysis: A comparison of Pig Latin and English*. 1999. Unpublished manuscript.

ROOSEVELT, F. *Childhood acquisition of Pig Latin by native speakers of English*. Manuscript submitted for publication.

Oral Presentation

Name of speaker. Title of presentation. Presentation in *Title of conference*, location (town, country), presentation date.

VONCILĂ, Mioara. Un model de organizare a bibliotecilor universitare ca sisteme întredeschise. Prezentare susținută în cadrul *Lucrărilor Conferinței Naționale a Asociației Bibliotecarilor din România*, Brașov, Romania, 10th September 2004.

Informal Publication

Author, year. *Title of publication* [prospect/circular]. Publication place: Publishing house.

Anglia Ruskin University, August 2007. *Using the Cochrane Library* [leaflet]. Cambridge: Anglia Ruskin University [2].

Publications on Internet (Web Pages)

Author/source, year. *Title of web document/webpage* [online]. (update time). Available at: web address [accessing date].

London South Bank University, 2009. *How to do your Referencing: Numerical Style* [online]. Available at: <http://www.lsbu.ac.uk/library/helpsheets/hs28.pdf> [cited 28 December 2010] [10].

Blogs/Weblogs

Author, year. Title of blog entry (posted message). *Title of blog* [blog]. Date of blog entry post. Available at: web address [accessing date].

WHITTON, Felix, 2009. Conservationists are not making themselves heard. *Guardian.co.uk Science Blog* [blog] 18 June. Available at: <http://www.guardian.co.uk/science/blog/2009/jun/18/conservation-extinction-open-ground> [Accessed 23 June 2009] [10].

Online Video Transmissions

Name of producer, year. *Title of video transmission* [video online]. Available at: web address [accessing date].

8.3 Using Microsoft Office Word-References

There are several electronic applications for references management: Reference Manager, EndNote, CrossRef. These applications must be purchased. We will demonstrate a free tool for those using Microsoft Office.

“References” is a useful instrument for the management of the information resources used and for generating a bibliography. In Fig. 8.4, all terms used in the program operation are translated.

8.3.1 Steps for Automatic Bibliography Generation

Adding Reference to the Document

When a new citation is added to a document, a new source is automatically created, appearing in the list of bibliographic references. On the menu bar choose **REFERENCES** (Fig. 8.2).

In **REFERENCES** menu, group **CITATIONS AND BIBLIOGRAPHY**, click on the arrow near **STYLE** and choose the style you wish to use. Microsoft Office Word 2007 offers the user the possibility of generating bibliographic references in various styles: **APA, Chicago, GB7714, GOST—sort by name, GOST—sort by**



Fig. 8.2 The elements used in information management

title, ISO 690—citations by first element and date, ISO 690—numeric citations, MLA, SISTO2, Turabian (Fig. 8.3).

Abbreviation	Style
APA	American Psychological Association
Chicago	The Chicago Manual of Style
GB7714	Standardisation Administration of China
GOST—Name Sort	The Federal Agency of the Russian Federation on Technical Regulating and Metrology
GOST—Title Sort	The Federal Agency of the Russian Federation on Technical Regulating and Metrology
ISO 690—First Element and Date	International Organisation for Standardisation
ISO 690—Numerical Reference	International Organisation for Standardisation

(continued)

(continued)

Abbreviation	Style
MLA	Modern Language Association
SIST02	Standards for Information of Science and Technology by Japan Science and Technology Agency
Turabian	Turabian Style

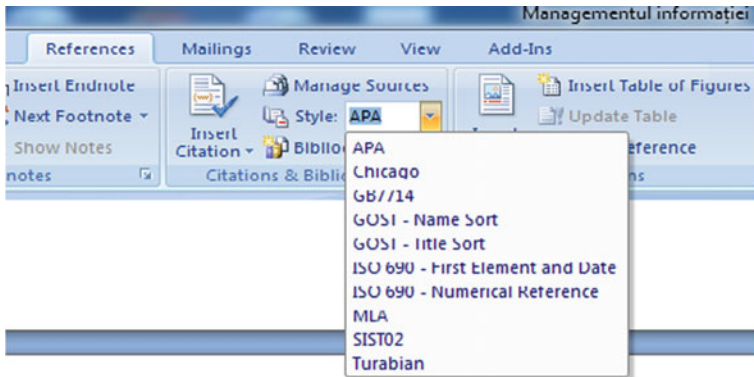


Fig. 8.3 Citations styles in Microsoft Office Word

Click in the place of the future citation. In **REFERENCES** menu, group **CITATIONS AND BIBLIOGRAPHY**, click on **INSERT CITATION** and select the necessary option: **ADD NEW SOURCE** or **ADD NEW PLACEHOLDER** (Fig. 8.6).

After click on **ADD NEW SOURCE**, the menu **CREATE SOURCE** click on the arrow near **SOURCE TYPE**, in drop-down menu, Fig. 8.4.

Select source type: **book**, **section of book**, **article in a journal**, **article in periodical**, **conference proceedings**, **report**, **Web site**, **document in Web site**,

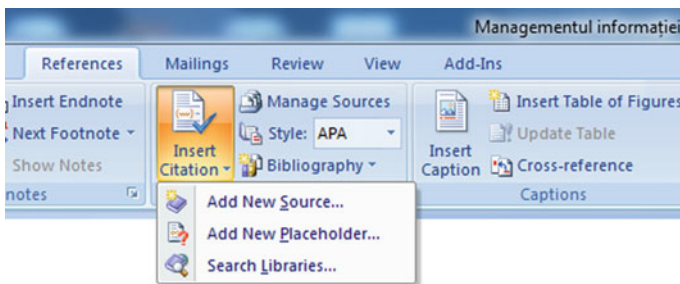


Fig. 8.4 Insert bibliographic references

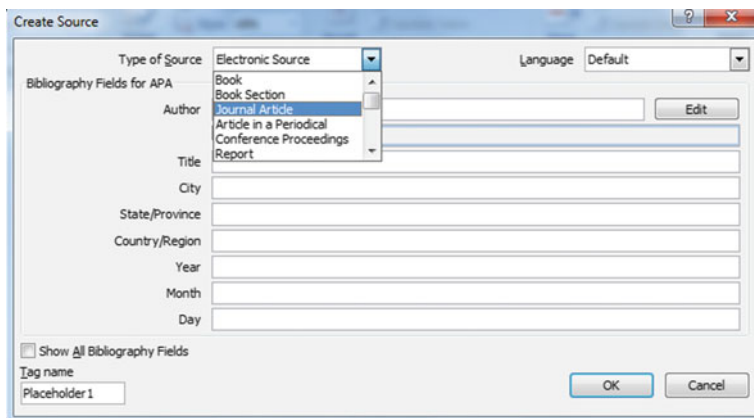


Fig. 8.5 Selecting source type

electronic source, art edition, audio recording, representation, film, interview, pattern, file, miscellaneous (Fig. 8.5). Also, select the publication language using **LANGUAGE**.

Fill in the bibliographic data for the document in the respective fields. In order to add more information about the document click on the selection box **SHOW ALL BIBLIOGRAPHY FIELDS**. Recommended fields are marked by an asterisk. After filling in the bibliographic data, click on **OK** (Figs. 8.6, 8.7).

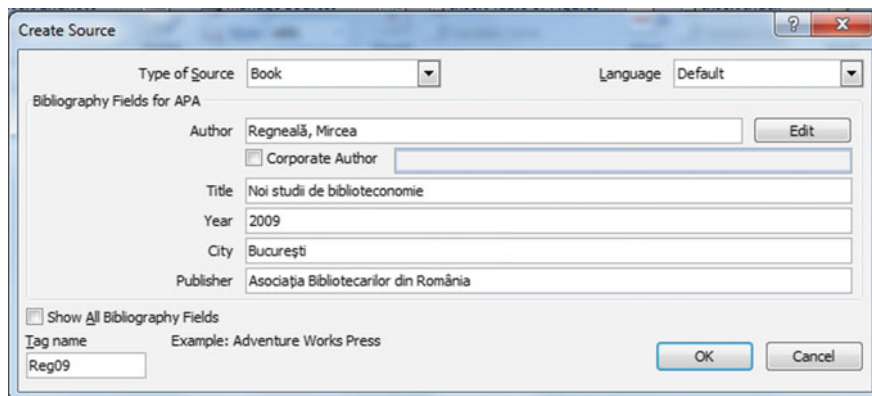


Fig. 8.6 Inserting a book

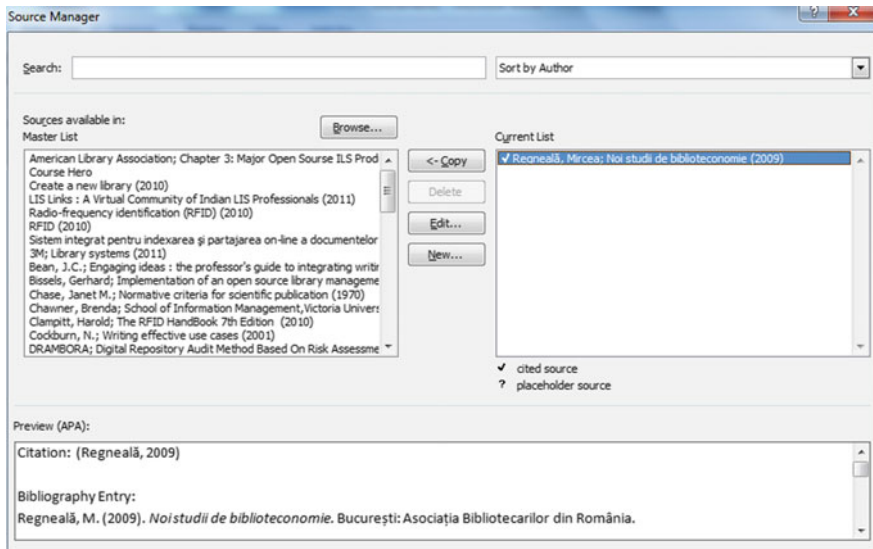


Fig. 8.7 Master list and current list

Search for Cited Sources

- In order to search for cited sources, select: **CITATIONS REFERENCES** and **BIBLIOGRAPHY SOURCE MANAGER**.
- **SOURCE MANAGER** includes two lists: **MASTER LIST** and **CURRENT LIST**.

When a new document is opened, all sources cited in previous documents are shown in **MASTER LIST** (Fig. 8.8).

- If the opened document already contains citations, then **MASTER LIST** includes all the resources consulted during the research, both in the current document and in previous documents. **CURRENT LIST** contains all cited sources in the current document.
- In order to find a certain source, select the sort type in the drop-down menu: **BY AUTHOR, BY TAG, BY TITLE, BY YEAR**. Look for the required source in the resulting list (Fig. 8.9).
- If you introduce the title or author of the source you are looking for in the **SEARCH** box, the list of the cited sources narrows in order to obtain the search term.

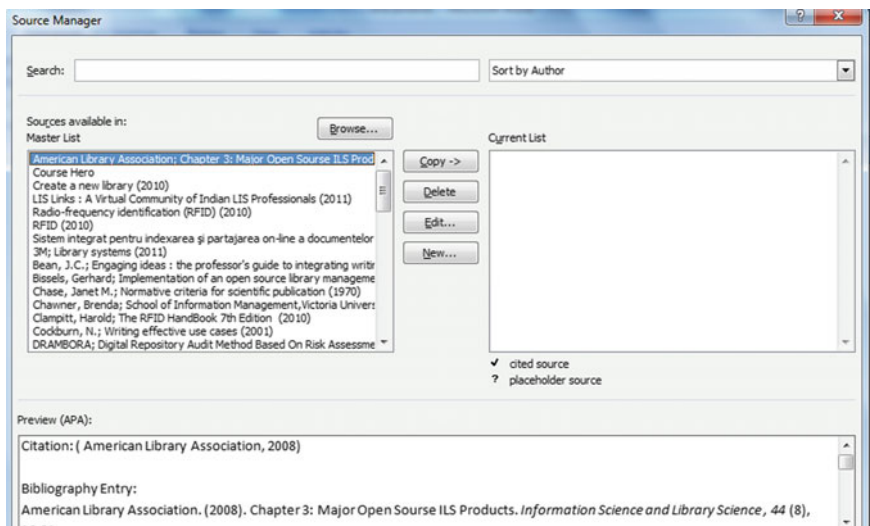


Fig. 8.8 Master list

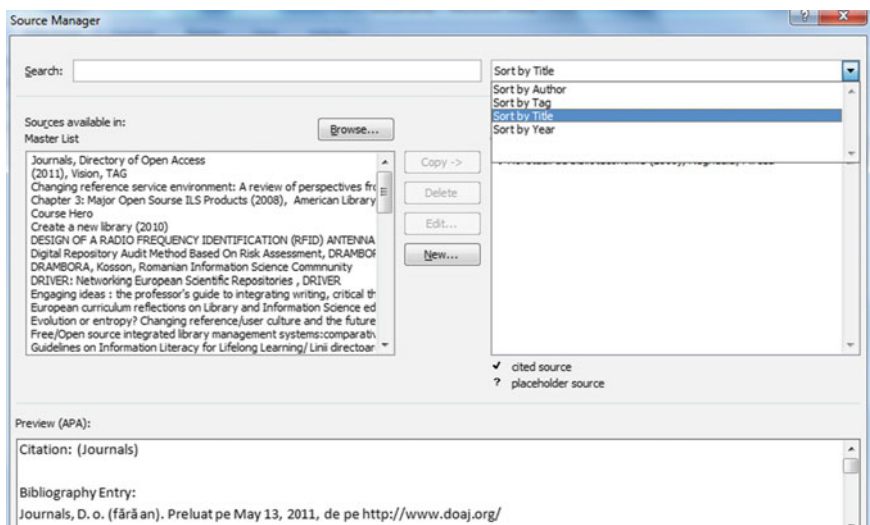


Fig. 8.9 Search sort in master list

References Editing

- In order to edit the references, select: **REFERENCES, CITATIONS AND BIBLIOGRAPHY—SOURCE MANAGER**.
- Under the **CURRENT LIST** click on the placeholder you wish to change or fill in.
- Click the **EDIT** button.
- Click the arrow near the **TYPE OF SOURCE**.
- Fill in or change the necessary data.
- After editing the bibliographic data, click on **OK**.
- All the changes are automatically shown in the bibliography.

Creating the List of References

- Creating the list of references is possible by a click made at any time after introducing one or more sources.
- Set the cursor in the text at the place where the list of references will appear (usually at the end of the paper or chapter).
- Select: **REFERENCES CITATIONS AND BIBLIOGRAPHY**.
- In order to insert the bibliography into the document, click on **INSERT BIBLIOGRAPHY** (Figs. 8.10, 8.11).
- In order to change style, select the preferred style: APA, ISO, MLA etc., using the **STYLE** icon. The references list is automatically updated.

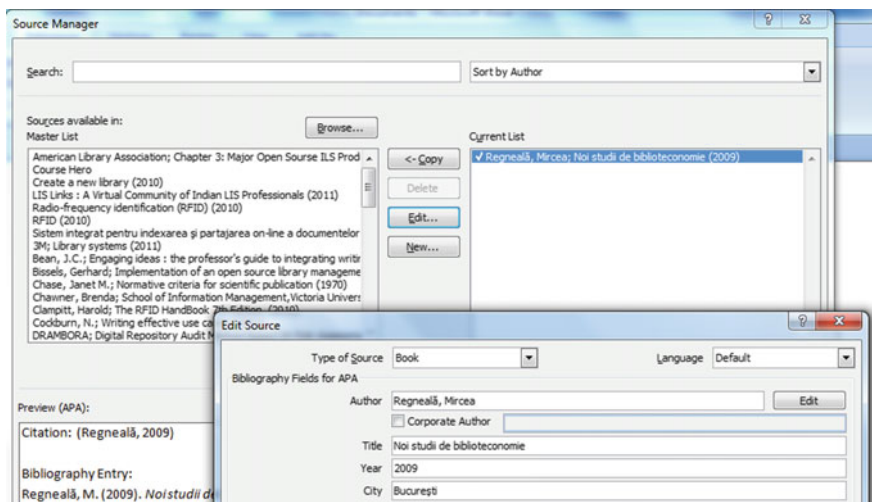
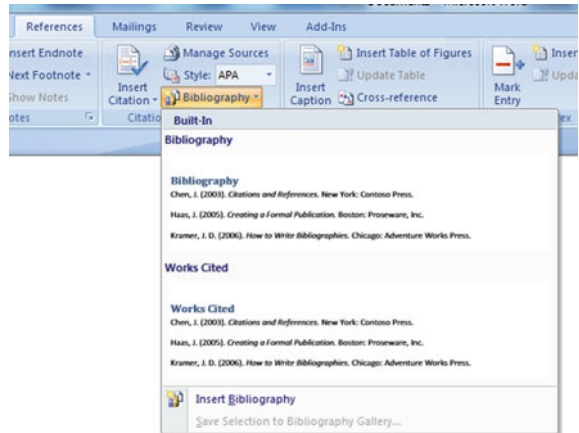


Fig. 8.10 References editing

Fig. 8.11 Insert bibliography



8.4 Other Publications Identification Elements: International Codes for Publications

8.4.1 International Standard Book Number

The International Standard Book Number (ISBN) is used as a key-element of recording and inventory systems for editors, distributors, libraries and other organisations. It was adopted in 1970 as an international standard ISO 2108. In Romania, the standard numbering system of books was introduced in 1989. ISBN identifies the editor, specific title, edition and book format. Once it is assigned, the ISBN number cannot be changed, replaced or reused. It has no legal value, meaning that it does not offer copyright protection. <http://www.isbn.org/standards/home/index.html>.

The ISBN consisted of ten digits until 1st January 2007 when it was increased to 13 digits, divided into five segments (separated by dashes):

- Segment 1: EAN prefix or code (European Article Number) may be only 978 or 979;
- Segment 2: identification number of the group representing the country, geographical area or language area that participates in the ISBN system. This element may have between one and five digits;
- Segment 3: editor identification number (may have up to seven digits);
- Segment 4: title identification number in editor's production (may have up to six digits);
- Segment 5: control position that allows validity check of the ISBN code (a single digit that mathematically validates the integrity of the number considered as a whole).

Being a National ISBN Agency, Romanian National Library distributes ISBN codes based upon standards that are approved and applied by the International ISBN Agency from London.

For printed publication, the ISBN number should be on the reverse of the title page, lower left part, in CIP description and on the back cover. The ISBN number of an electronic document is displayed on the title presentation page or its equivalent, on CD-ROM (cover or disk) and on the presentation page.

8.4.2 International Standard Serial Number

The International Standard Serial Number (ISSN) is the international standard code of the serial publications like: newspapers, journals, annals, bulletins, and scientific papers. ISSN was released and developed under the United Nations International Scientific Information System programme (UNISIST) created together with UNESCO. In 1975 the international standard ISO 3297 was adopted.

The ISSN International Centre based in Paris records every ISSN code together with the publication title and bibliographic description in a specialised database: *The ISSN Register*. This database, constantly updated within the network has an annual growth between 40,000 and 60,000 ISSN numbers.

The ISSN network consists of national centres, which are responsible for the efficient continuation of the ISSN system, achieving bibliographic consistency. As an ISSN National Centre, the Romanian National Library distributes ISSN in Romania.

An ISSN number consists of two segments each made of four digits (Arabic numbers) separated by a dash, preceded by the ISSN acronym, followed by a space. The last element (control element) is X.

According to standard ISO 3297:2007, ISSN liaison number (ISSN-L) is assigned to a serial publication in order to regroup different physical parts of the respective resource, regardless of the number of parts (each of these parts should have a unique ISSN number www.issn.org).

8.4.3 International Standard Music Number

The International Standard Music Number (ISMN) is an index applicable to printed musical publications.

Each standardised international number for written or printed musical publications, should be preceded by letters ISMN and each component element should be separated by the following using a space or a dash as in the following examples: ISMN M 571 10051 3, ISMN M-01-123456-3.

8.4.4 Digital Object Identifier

The Digital Object Identifier (DOI) represents an identification system of a work produced in a digital environment. The DOI system is currently being standardised using ISO. The international standard project ISO/DIS 26324 was approved at the end of 2010.

The DOI International Foundation (IDF) was established in 1998, in order to develop an infrastructure, policies and procedures framework to support suppliers' needs and to protect intellectual property in the digital environment <http://www.doi.org/>.

A DOI number consists of a prefix and a suffix, separated by a slash. The prefix starts with "10". The next element of the prefix identifies the name of the organisation that wishes to record the DOI number. Prefix blocks are assigned by the DOI Registration Agency. A suffix is chosen by the editor, by identifying the specific object. It can be a simple sequential number or an already established code is used (ISBN or any other property ID), that allows integration based on existing systems. This looks as follows: ["doi" acronym with regular letters, followed by a colon (:) no space].

Each DOI is unique and final. A document keeps its own DOI for its entire existence and, in case of document elimination, the number can never be used again.

Suggested Teaching

Warm-Up

Name crossword.

The teacher divides the participants into four groups. Each group will receive sheets of paper and pencils. The trainer urges the groups to write their names under each other in order to form a crossword of these names. Recommended working time is three minutes. Teams will present their results at the end of the activity. The trainer will congratulate the participants for their involvement.

Teaching Activities

The learning situation in which students will be involved will require the use of encoding, storage and recognition of information processes from memory.

Thus, the teacher will announce the title of the lesson and write on the whiteboard or flip chart the lesson objectives. The trainer will explain the meaning of information management. He will present Fig. 8.1. *Information use*, either by writing on the whiteboard or with a poster printed before the lesson. The teacher will ask students to transcribe it into their notebooks and memorise it or to be familiar with it.

Through the conversation and explanation method, the teacher will go through (8.1) *Using information in the research process*. He will require trainees to note and retain the elements bolded in the unit's summary. The teacher will ask the question: "Why do you think the bibliographic description rules are necessary? What purpose do they serve?"

The use of the bunch method, which is widely described in Chap. 10 of this volume, becomes a useful tool at this time of teaching. The method is a teaching-learning technique that aims to stimulate learners to think freely and discover connections between ideas. In a first phase, the teacher can demonstrate how the first level of the bunch is formed, and then, for the next steps, encourage students to build new ideas associations.

Sequence (8.1.2) *Principles of Describing Information Sources* can be read from the support course and it can be transcribed as a bunch by a pair of two students. Analogy will be used as a didactic strategy, in order for the trainees to copy the previous approach based on the transfer of information and the similarity with the previous situation.

Other graphical organisers, useful in teaching the sequence (8.1.3) *Citation Methods*, are tree schemes. These may be horizontal or vertical. Among the horizontal ones, we mention: horizontal cause-effect tree, and the type of situation—problem—explanation, classification type. Some of the best-known vertical tree schemes are Tree of Ideas and Concept Tree.

These graphic organisers allow information to be arranged according to logical criteria such as classification, attributes of a phenomenon, or determinant situations. Lines or arrows represent relationships between concepts, they can emphasise and show the direction of influence between them. An example of such a network is shown in Fig. 8.12 *Examples of the Elements of a Graphical Organizer*.

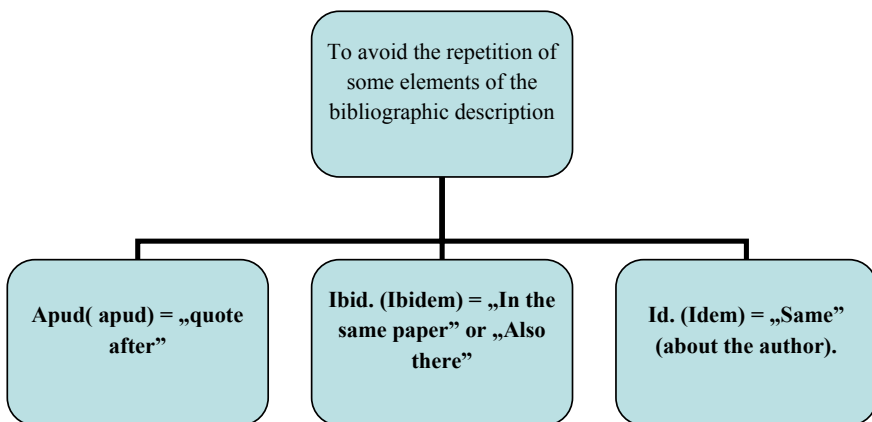


Fig. 8.12 Example of the elements of a graphical organizer

Activity (8.2) *Citation Styles* can be taught by the Mosaic method or the Cube method. If the Mosaic method is used, the participants will be divided into four relatively homogeneous groups. Within the groups, there will be another division. Regardless of the number of participants, they will count from one to four, repeating the counting sequence where necessary. Students will be divided into four other groups, reminding them not to forget the composition of the original groups.

They will receive edited text from the course summary, equivalent at the level of difficulty and size. The task of the groups is to become experts in the course given, and then, after completing their activity, return to the original groups and teach their colleagues the activity for which they were responsible. The role of the teacher is to facilitate the work of the experts and mentor their work. He can intervene whenever necessary.

If the cube method is used, the group is divided into six relatively homogeneous subgroups. The cube will be built before the course starts. Each facet will represent a work field: *describe, compare, analyse, associate, apply, or discuss*. The subgroups will have the task of solving one of the requirements on the cube faces. After all groups complete the tasks, they will designate a member of the group who will communicate the results (the information can be noted on the flip chart or whiteboard).

Example of tasks:

- *Describe* References in notes system;
- *Compare* Harvard and Vancouver citation styles;
- *Analyse* printed information sources;
- *Associate* appropriate quotation methods for an oral presentation of your choice from a student's scientific conference, your favorite blog, or a online video transmission;
- *Apply* all citation styles described in the course for an Information Literacy manual of your choice; or
- *Discuss* why so many citation styles are used.

Course Sequence (8.3) *Using Microsoft Office Word-References* will be done by demonstration and modeling. The teacher will use a computer with Microsoft Office Word installed, projecting the image of an accessed Word page with a video projector. We recommend that the trainer verbalise each stage and explain each command he gives in the program. If there are requests or questions from the trainees, he will stop and give the necessary explanations.

Modeling as a method involves students repeating what the teacher has demonstrated. Therefore, it would be ideal if this course would be held in a room equipped with sufficient computers for one for each participant. At the end of the activity, students will be given two similar situations for practising newly formed skills.

For the activity (8.4) *Other Publications Identification Elements: International Codes for Publications*, the trainer will divide the participants into four groups. Each group will receive two volumes, one with an ISBN and one with an ISSN. The task of the students will be to discover the differences between the two volumes and thus the two different identifiers.

At the end of the activity, after each group will communicate the differences found. The relevant identifying elements will be explained to the students for the International Standard Music Number and the Digital Object Identifier.

Review

Students will be asked to fill in the following table in groups:

Criterion	My notes
Course summary/main ideas	
Keywords	
Questions	
Connections	
Personal reflections	

Applications

1. Identify in scientific papers recently read at home, the following types of sources: course notes, a PowerPoint presentation, a research article, and a book or specialty literature.

2. Cite the sources indicated above through the MLA, APA, or ISO systems.

.....
.....
.....

3. Analyse the differences between the sources specified in application task 1, using the following criteria: page number, generality level, structure of information, and number of citations.

4. Analyse a highly rated article in your field of study. Make a list of the main difficulties you encounter when reading such an article.

.....
.....
.....

5. Find a program that you can use on your personal computer, where you can make a bibliography of a scientific document with ease. Explain how it works and argue for your choice.

.....
.....
.....

Evaluation

Question	Answer
For what will I use this course?	
Did I correctly understand the knowledge?	
Have I ever faced such learning situations?	
How did I manage other situations?	
What techniques, procedures have I used then, and can I use them now?	
Can I learn alone or will I need help?	
How will I know if I have succeeded?	

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Abstract

After completing this learning unit, you will be able to:

- Identify situations of plagiarism;
- Analyse and compare European and Romanian legislation on intellectual property;
- Identify the structure of a scientific presentation and the requirements for rendering and editing each component of the presentation;

Keywords

Plagiarism · Citation · Intellectual property · Copyright · Information communication

9.1 Ethical Use of Information

9.1.1 Plagiarism

According to the Romanian Language Explanatory Dictionary:

- To plagiarise is to acquire, to copy someone's work, presenting it as a personal creation; to commit a literary, artistic or scientific theft; and
- Plagiarism is a literary, artistic or scientific work of someone else, entirely or partially acquired and presented as a personal creation (DEX 1998).

The word “plagiarism” comes from Latin “plagium”, translated as “selling to others stolen slaves or slaves that do not belong to the seller”.

Plagiarism appeared in ancient times. The term “plagiarism” occurred for the first time with the Greek epigram writer Martialius who, in the conflict with another author, Fidentius, that published a work of Martialius’ poetry as his own, accused him of plagiarism, stolen children. Martialius considered his poems as “the children of the mind” and felt Fidentius had stolen them. Many authors have been accused rightly or wrongly of plagiarism over time, but only after the concept of copyright appeared for the first time in an encyclopaedia in 1800 did it become clear that it is not ethical to use somebody else’s work without the correct citation.

Plagiarism is the presentation of another author’s work in such a manner that it offers the reader the impression it belongs to oneself. Examples of plagiarism:

- Taking a phrase from a book without placing it in quotation marks;
- Copying information from any sources including Internet;
- Using works for which credit has been already obtained; and
- Failure to adequately use endnotes or other citation methods.

Paraphrasing is a method to avoid plagiarism. By paraphrasing, we avoid copying a paragraph word for word. Reformulating the idea with your own words helps conceptual understanding and avoids plagiarism at the same time. The following steps are to be taken:

- The original passage should be read several times to fully understand its meaning;
- The passage will be reformulated using one’s own words;
- Borrowed language should be avoided;
- All the essential information will be expressed accurately but in a new form;
- Quotation marks are not used;
- The source is mentioned; and
- The source is cited in the text.

EXAMPLE:

Paraphrasing the quote “*forestry includes the entire assembly of preoccupations concerning forest knowledge, its creation and care, harvesting and rational capitalising of its products, as well as the organisation and leadership of the entire management process*”, (Ion I. Florescu, Norocel V. Nicolescu, *Silvicultura* vol. I, 1996, p. 11), leads to the following formulation:

The forestry domain is very complex, covering aspects that ensure the entire process of forest management, starting from its creation and care until a sensible capitalisation of associated products (Ion I. Florescu, Norocel V. Nicolescu, *Silvicultura* vol. I, 1996, p. 11).

9.1.2 Citation

Citations are an important form of communication in a school environment. They present, in a formal manner, the origin of ideas and concepts, so that anyone can follow the development of research on a certain topic.

They offer enough information for any person interested in accessing the same research for an alternative study.

A citation offers all the necessary information to someone to locate a copy of the work, if desired. A citation does not include a library code as the person who reads a paper or an article will not be always in the same institution as the author.

With the growth of the Internet and the multitude of texts available online, the tendency and ease of plagiarism has increased. It is obvious that in an educational environment, many pupils and students are not aware of the term: “plagiarism” and do not understand the issue. They consider that any available information belongs to everybody.

This gives rise to the need for Information Literacy courses. This guide offers all the necessary information to create a paper in an ethical manner and to avoid accusation of plagiarism.

The information industry offers many tools to detect plagiarism.

9.1.3 Plagiarism Detection

Digital documents are vulnerable to copying. Most copying detection prototypes use an exhaustive method based upon comparing the text subjected to verification to other original documents in order to identify plagiarism.

Practically, the software detects all documents that contain the same sentences or phrases, using the same order of words. In case the citation is correctly done and the sentence is written using quotation marks and the source is indicated, the detector will not signal anything wrong. Each software package indicates on its presentation page which search engines are checked. Most of them check on Google, or Yahoo.

Also, when paraphrasing, the word order is no longer the same, the source is indicated and the plagiarism avoided. Various types of plagiarism can be classified:

- Copy and paste;
- Copy, shake and paste;
- Patch-writing (rewording);
- Structural plagiarism; or
- Translations.

Which of these frauds can be discovered? Translation detection is not possible. Structural plagiarism is also difficult to determine. If the ideas are presented in the same order and the footnotes follow the same sequence as other authors, but if the semantics of phrases is not the same at a syntactic level then plagiarism can be detected only by human reading.

9.1.3.1 Plagiarism Detection for Text Documents

A few anti-plagiarism software packages are presented as follows, in order to understand how they work and how useful they are.

We highlight the top ten free plagiarism detection tools: (eLearning Industry 2013) (Table 9.1).

Checking opinions of most researchers on Researchgate, often mentioned are: Turnitin, iThenticate, URKUND.

(https://www.researchgate.net/post/Which_is_the_best_anti-plagiarism_checking_software).

Table 9.1 Top ten free plagiarism detection tools

<p>Dupli Checker This is one of the most effective free plagiarism detection tools on the Internet. While it doesn't have a fancy interface, it certainly gets the job done well</p>	<p>PROS</p> <p>Free Of Charge You don't have to pay anything. Whether you are a one-time user or plan to make the most of this free plagiarism detection tool on a daily basis, you are not required to pay for subscription</p> <p>Ease Of Use You are presented with a very basic, functional layout that does not require any previous experience with plagiarism detection tools</p> <p>Two Ways To Check For Plagiarism Duplichecker enables you to either copy and paste your text in the field and then check it for plagiarism, or upload a Docx or Text file from your computer</p> <p>50 Plagiarism Scans Per Day For Registered Users If you sign up for free, Duplichecker allows you to do 50 plagiarism checks in a single day</p> <p>CONS</p> <p>Search Per Day For Unregistered Users If you choose not to indulge in a free sign-up then you are limited to only one plagiarism check per day</p> <p>PLANS AND PRICING</p> <p>No paid version is available</p>
<p>Copyleaks This cloud-based authentication platform enables you to track how eLearning content is being used all around the Internet</p>	<p>PROS</p> <p>For Education And Business Different sections on the platform for educational and business purposes. The business section checks publishers and SEO agencies, while the education section schools, students and universities</p> <p>Multiple File Formats And Languages</p>

(continued)

Table 9.1 (continued)

	<p>Copyleaks is able to scan content in various file formats and all Unicode languages</p> <p>Variety of Tools Copyleaks allows you to use the API tool to search for plagiarised eLearning content all over the Internet. It also offers a mobile app along with an MS Office add-on, which you can use to check for plagiarism as you are writing a document on MS Word</p> <hr/> <p>CONS</p> <hr/> <p>You Can Use It Only After You Sign Up Unfortunately, you need to create an account for free first, in order to search for plagiarized eLearning content</p> <p>Free Page Restriction Only the first 10 pages are for free</p> <hr/> <p>PLANS AND PRICING</p> <hr/> <p>For Businesses If you sign up for free you are allowed to check 2,500 words per month. There are flexible subscription plans starting from \$9.99 per month to check up to 25,000 words without a limit on days in the month. You may also choose to pay a prepaid amount that corresponds to a specific number of words to be checked monthly</p> <p>For Education The Free package works the same as for businesses. Starting from \$10.99 you can check for up to 25,000 words. The prepaid option for business is also available here</p>
<p>PaperRater A multi-purpose free plagiarism detection tool that is used in over 140 countries</p>	<p>PROS</p> <hr/> <p>3 Tools In 1: Proofreader and Grammar Check, Vocabulary Builder, Plagiarism Checker If you need to check your text for grammar mistakes, have it proofread with suggestions for different wording, or have it checked for plagiarism, this is the tool</p> <p>Developed By Industry Experts Developed by a team of computational linguists and subject matter experts</p> <p>Fast Results PaperRater boasts accurate results in seconds</p> <hr/> <p>CONS</p> <hr/> <p>No Ability To Save Reports If you are looking to store a result report, then you are out of luck here</p>

(continued)

Table 9.1 (continued)

	<p>PLANS AND PRICING</p> <p>Basic Free of charge, submissions of up to five pages, grammar and spelling check, writing suggestions tool and automated scoring</p> <p>Premium \$7.95 per month or \$95.40 per year. All above features included plus proofreader with simultaneous plagiarism check, no ads, file uploading ability and faster processing times</p>
<p>Plagiarisma Basic and easy-to-use, multi-purpose plagiarism detection tool that is used by students, teachers, writers, as well as various members of the literary industry</p>	<p>PROS</p> <p>190+ Languages Supported There is virtually no language excluded from the list</p> <p>Plagiarism Check By URL, Online Or File Upload Copy and Paste or Type your text in the appropriate field, provide a URL, or upload a file from your computer. Supported file types include: TXT, HTML, RTF, DOC, DOCX, XLS, XLSX, PDF, ODT, EPUB, FB2, PDB</p> <p>Firefox And Chrome Extensions Have your text quickly checked by downloading the add-ons</p> <p>CONS</p> <p>Limited Plagiarism Checks Per Day If you are looking for a tool for extensive use then look somewhere else. The free version has a limited number of plagiarism checks</p> <p>PLANS AND PRICING</p> <p>Variety Of Plans Free version of Plagiarisma offers all the aforementioned benefits. If registered, you can upgrade to Premium Membership. Pricing plans start from \$5 for one day for up to 100 searches. For unlimited searches, there is a \$25 or \$30 subscription for three or six months, respectively. For up to 25 users, there is a fixed monthly subscription of \$25 for an unlimited number of searches</p>
<p>Plagiarism Checker User-friendly, entirely free plagiarism detection tool to check whether content is plagiarized</p>	<p>PROS</p> <p>Detailed Guidelines One of the easiest to use free plagiarism detection tools due to its step-by-step approach on how to use it</p> <p>Check If Others Have Plagiarised Your Online Content</p>

(continued)

Table 9.1 (continued)

	<p>Click on the “For authors” option to check whether they have plagiarised your content and posted it on the Internet. You may also receive notification by email</p> <p>Entirely Online No downloads required</p> <hr/> <p>CONS</p> <p>Supports Only Google Or Yahoo Browsers If you are not using either of those browsers then you might want to look elsewhere</p> <hr/> <p>PLANS AND PRICING</p> <hr/> <p>Free of charge</p>
<p>Plagium Basic but fully functional free plagiarism detection tool with different levels of search</p>	<p>PROS</p> <p>Easy to use You basically copy-paste text. It features two types of searches, quick search and deep search. Free For Up To 5000 Characters Each Time For up to 5000 characters per search you don’t have to pay any fee</p> <hr/> <p>CONS</p> <p>Limited Free Features Only if you sign up you can upload your file, have it checked, and receive a word usage report on it</p> <hr/> <p>PLANS AND PRICING</p> <p>Quick Search And Deep Search Offers If you are a frequent user of the platform, Plagium urges you to pay for a subscription. For \$9.99 per month you can do 287 Quick Searches and 143 Deep Searches. For \$24.99 per month you can do 699 Quick Searches and 349 Deep Searches. The last option is a \$99.99 per month subscription that offers 2,949 Quick Searches and 1,474 Deep Searches</p>
<p>PlagScan Plagiarism detection tool for both individuals and businesses that checks texts against online content, scientific journals and the user’s documents as well</p>	<p>PROS</p> <p>Fully Online No download required</p> <p>3 Ways To Do Plagiarism Checks You can select from: a) directly pasting you text into the appropriate field, b) importing the file from the web by entering its URL in the indicated area, or uploading it from a cloud storage area such as Dropbox, Google Drive, or OneDrive, c) uploading a file from your desktop</p> <p>No Subscriptions For Private Users</p>

(continued)

Table 9.1 (continued)

	<p>The user pays on-demand according to their respective needs</p> <p>Integration Features Businesses can integrate Plagscan into several Content and Learning Management Systems (CMS/LMS)</p> <hr/> <p>CONS</p> <hr/> <p>Relatively Complicated Interface As opposed to competitive platforms the interface seems quite advanced</p> <hr/> <p>PLANS AND PRICING</p> <hr/> <p>Private Users Starts from \$5.99 per month with online storage time for up to 6 months</p> <p>Organizations Accounts for schools, universities or companies start from \$19.99 per month with unlimited online storage time along with a variety of administration and cloud features</p>
<p>PlagTracker Fast free plagiarism detection tool that searches both websites and academic databases by copying and pasting text, or file uploading</p>	<p>PROS</p> <hr/> <p>Aimed At Different User Groups Students, teachers, publishers and site owners can take advantage of Plagtracker</p> <p>Detailed Reports The user is informed as to what parts need to be cited and a list of sources to be used</p> <p>6 Languages Supported Check your eLearning content in English, French, Spanish, German, Romanian and Italian</p> <hr/> <p>CONS</p> <hr/> <p>No File Upload In Free Version You have to purchase a premium package to have your file uploaded and checked</p> <hr/> <p>PLANS AND PRICING</p> <hr/> <p>One Premium Offer For \$7.49 per month you can upload and check larger files with faster processing times, grammar checks and unlimited checking volume for multiple documents</p>
<p>Quetext Basic layout and functional interface that checks against the Internet, as well as various databases</p>	<p>PROS</p> <hr/> <p>No Subscriptions Quetext is entirely free</p> <p>Unlimited Usage No account, registration or downloads needed</p> <hr/> <p>CONS</p> <hr/> <p>No File Uploading</p>

(continued)

Table 9.1 (continued)

	Users can only copy and paste text in the designated area
	PLANS AND PRICING
	Free of charge. No premium memberships. No subscriptions available
Viper A three-step free plagiarism detection tool with user-friendly interface	<p>PROS</p> <p>100% Free All features are available to everyone on the Internet</p> <p>Extensive Plagiarism Check Range Your document will be checked against more than ten billion online resources including journals, books and websites</p> <p>CONS</p> <p>Limited Target Group Mostly targeted to academic students as it is widely used for evaluating student papers</p> <p>PLANS AND PRICING</p> <p>No subscriptions available. Entirely free platform</p>

9.1.3.2 Operation of Plagiarism Detection Systems

- Step 1: Loading the document to be checked.
- Step 2: Comparing text to the documents indexed by the main search engines on the Internet.
- Step 3: A report is received regarding the paragraphs and sentences that were plagiarised and also the sources from which the paragraph was copied. Also a report is sent about what percentage is considered original.

Practical Example

Viper, The anti-plagiarism scanner, <http://www.scanmyessay.com/>.

Viper is anti-plagiarism software, freely downloadable from Internet. We demonstrate a duty cycle. We subjected the chapter “Information management” of this guide to checking.

- Step 1: Opening the working window, Fig. 9.1.
- Step 2: Load the document subjected to checking and select the document type. By selecting a certain domain, the search software will be oriented towards the sites containing this type of information, Fig. 9.2.
- Step 3: If you desire, Viper also checks the files on the personal computer. This option is valuable in the case of a professor who has electronic files of students’ papers. This way he may find if there are identical papers. Also, we can detect if the same form of information was used in other personal papers, Fig. 9.3.

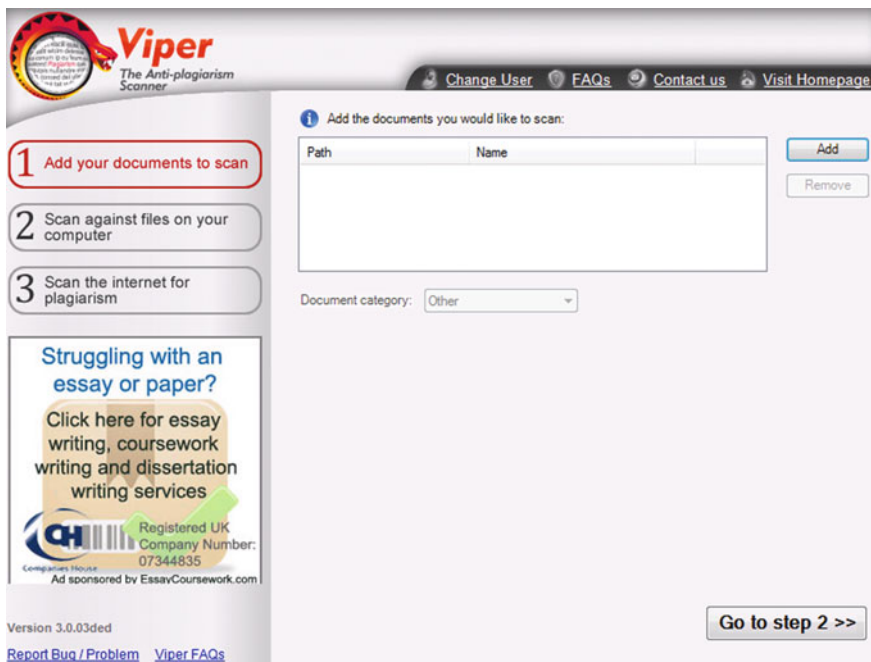


Fig. 9.1 Working window Viper

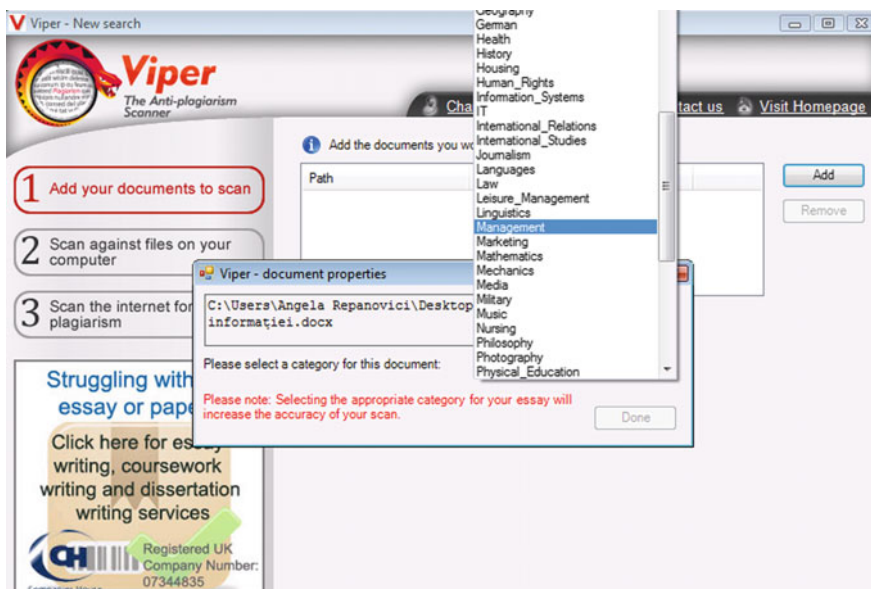


Fig. 9.2 Loading the document and its classification

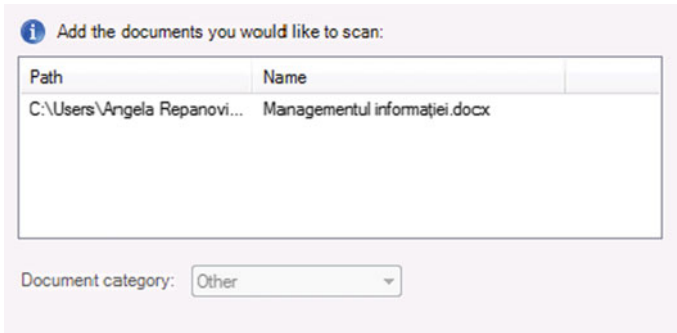


Fig. 9.3 Loading the “Information management” document

If we wish to scan the Internet, we select the button *Go to step 3* and then *START* Figs. 9.4 and 9.5.

Step 4: Viper scans the Internet. We can see it is working following the left of the screen: Queered for processing, Fig. 8.6, then the scanned percent of the paper and sites where similar expressions or passages, as in the document subjected to scanning, were identified.

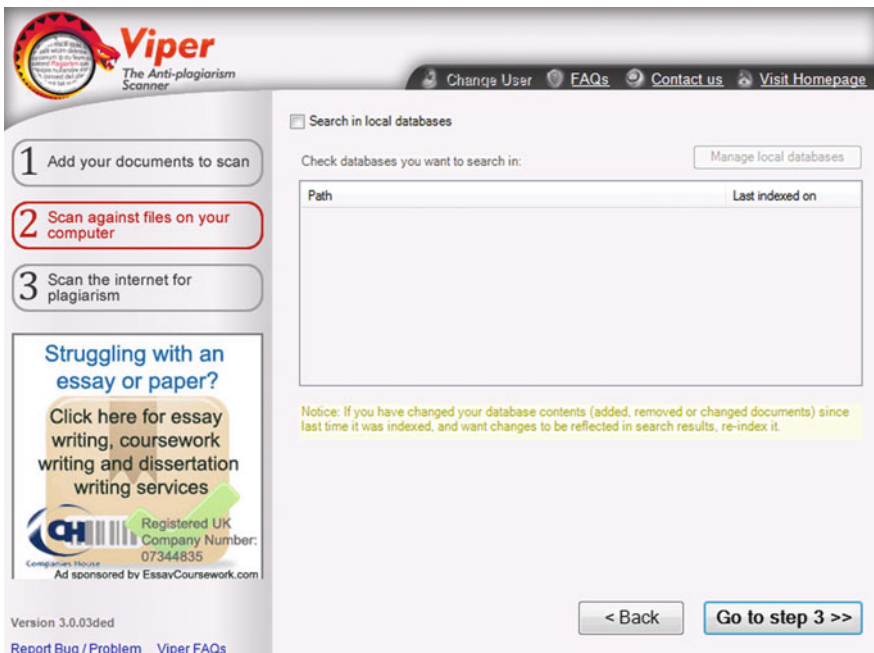


Fig. 9.4 Option Viper to scan personal computer

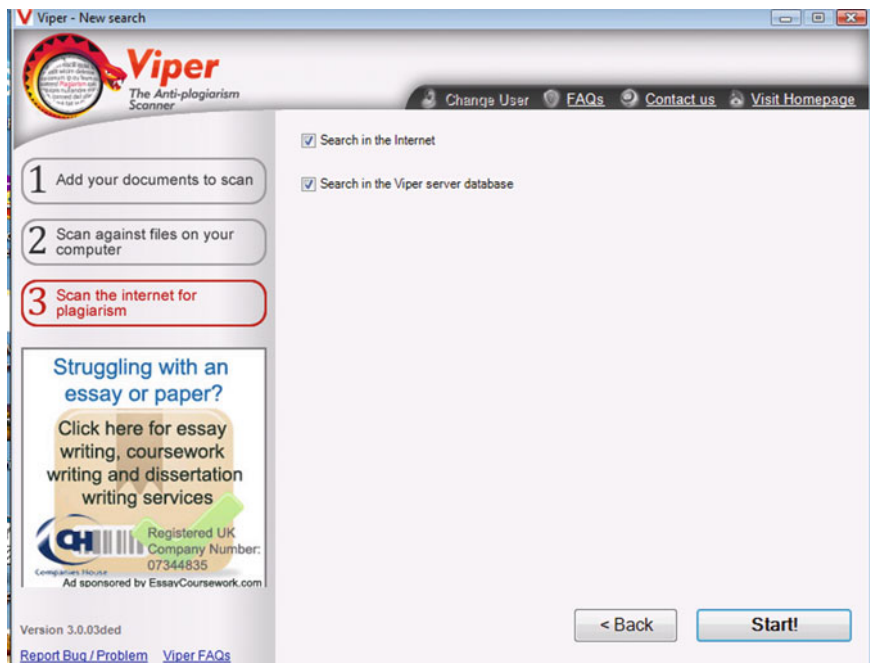


Fig. 9.5 Web space scanning process

Step 5: Finalising the scan and creating the report, Fig. 9.6.

Viper detects documents where there are five or more words in the same order as in the checked document. Fragments with the same order of words may be identified, but they are not necessarily plagiarism. The important thing is that these fragments are not ignored.

This may attract attention upon possible reformulations of the author, keeping the initial structure but failing to credit the material used. The software checks direct citations. A percentage of directly cited words is calculated.

Assessment of plagiarism.

The percentage finally indicated represents the assessment concerning the number of identified and used identical documents. Thus:

≤ 6%—Very unlikely to contain plagiarised material. In this case, the size of the document is taken into account. In case the document is over 15,000 words, we may consider that 6% represents plagiarism.

6–12%—Low risk of containing plagiarised material. Most fragments detected to be identical to other sources may be usual sentences in the field. A careful review of sources is recommended and their citation.

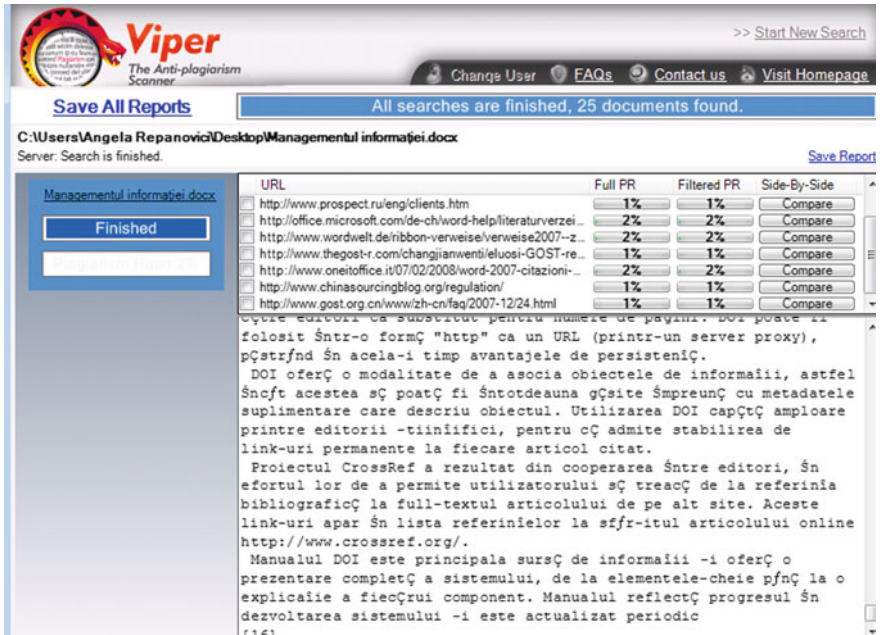


Fig. 9.6 Finalising the scan and creating the report

13–20%—Average risk of containing plagiarised material. Certain matches may be with different websites. It must be checked if the author cited correctly. It is possible that the footnotes are not detected by scanning. This should be checked again very carefully.

Over 21%—High risk of containing plagiarised materials. Document must be reviewed.

In the demonstrated practical case, the assessment returned a score of 2% similar phrases and the software also offered a list of plagiarised documents, see Fig. 9.7.

List of plagiarised documents

2%	http://office.microsoft.com/en-gb/help/bibliography-citation-styles-HA010210919.aspx
2%	http://www.oneoffice.it/07/02/2008/word-2007-citazioni-e-bibliografia/
2%	http://www.wordwelt.de/ribbon-verweise/verweise2007--zitate-und-literaturverzeichnis/verweise2007--zitate/verweise2007--zitate-und-literaturverzeichnis/verweise2007--zitate-und-literaturverzeichnis--tips--tricks/tut-07_04_03_zitatevaendern.html
2%	http://office.microsoft.com/de-ch/word-help/literaturverzeichnisformate-fur-zitate-HA010210919.aspx
2%	http://www.tech-archive.net/Archive/Mac/microsoft_public_mac_office_word/2008-12/msg00139.html
1%	http://www.prospect.ru/eng/clients.htm
1%	http://www.gost.org.cn/www/zh-cn/faq/2007-12/24.html
1%	http://www.thegost-r.com/changjianwen/chaosi-GOST-renzheng-PCT-renzheng-intro.html
1%	http://www.chinasourcingblog.org/regulation/

Fig. 9.7 List of plagiarised documents

9.2 Intellectual Property. Copyright. Legislation

In Romania, *Law no. 8/1996 concerning copyright and related rights* supplemented and amended by Law no. 285/2004 and OUG no. 123/2005 and updated in 28/12/2005 broadly applies European principles regarding exceptions and limitations. “Using a short extract of an work is allowed [without specifying size], by respecting citation principles, within libraries, museums, archives etc., and also an entire reproduction of a work, excluding serious damage, destruction or losing the only copy of a collection. Creative intellectual work is recognised and protected, regardless of disclosure to the public, by the mere fact of its creation, even unfinished.” (Copyright Law, 2005)

“Author”—Physical person or persons that created the work.

When a work is disclosed to the public in an anonymous form or using a pseudonym that does not allow author’s identification, the copyright is exerted by the physical or legal person that makes it public only with the author’s consent, as long as he does not reveal his identity.

Common work—work created by several authors in collaboration.

Copyright on a common work “belongs to its co-authors, among which one can be the main author” (Copyright Law 2005).

“Reproduction of a work is allowed without the author’s consent, for personal use or the normal family circle, provided this does not contradict the interests of copyright holders.” (Copyright Law, 2005).

“Duration of a works’ protection by copyright is identical to the one stated in the European Union’s directives, meaning 70 years after the author’s death.” (Copyright Law, 2005).

9.3 Information Communication

9.3.1 Creating and Presenting Academic Works

The structure of academic works is to be formed according to standard STAS 8660-82, Books and brochures: editorial presentation, Romanian Institute for Standardisation, 1982, and is presented in Fig. 9.8. Structure of academic works.

As follows, we present some recommendations required to achieve this structure.

Project’s Title:

- Too general titles are to be avoided;
- Customising the general title with the help of an expression or subtitle is attempted;
- Paper’s title may be customised in order to express what was researched in the main body.

Fig. 9.8 Structure of academic works



Structure on Chapters—General Recommendations:

- Very short chapters should be avoided and also excessive fragmentation of the work;
- A chapter's title should accord with its content;
- The first step in creating a coherent paper is content; its chapters representing a gradual development of ideas.

The introduction is a reflection of the entire work, created for the reader who does not have the time to read the entire work.

Motivation of the Topic Choice Should Highlight:

- Relevance for administrative domain;
- Short presentation of the domain's state of research progress;
- Presentation of structure in chapters;
- Presentation of research result and conclusion.

Structure in Chapters—Theoretical Part Represents:

- A way of copying theories and definitions: theoretical contribution may consist in analysing definitions elements, finding similarities or differences;
- We start from credible sources and then extend search to Internet sources (credible sources: organisations' reports, Ph.D. thesis, statistics of some research institutes);
- Avoid copying paragraphs or entire pages; if you take more extended paragraphs, reformulation should be attempted.

Main Body Contains:

- Aim of research/research hypotheses;
- Research instrument/sampling;
- Presentation and interpretation of research results (use graphical supports, tables, figures);
- Conclusions.

Presentation Creation, Scientific Papers Editing:

- Any scientific paper can be presented to be capitalised in an explicit form by editing its text;
- Editing a scientific paper is an important part of scientific research, presenting the results of scientific investigations to be appreciated.
- Editing represents a communication of research results. We will find in it the accomplishment of the proposed objectives, methods and techniques used and communication of the results obtained.

It is necessary to observe some rules of form and content uniformity:

- Simple style, clear and precise speech, appropriate to the object's expression;
- Respecting communication code by legibly writing, using demonstration logic, correct use of punctuation, concise phrases;
- Well thought out structure of the work by highlighting its components;
- Emphasising reasoning and conclusions, demonstrations of each part, each presented idea and such like;
- A suitable length of work and a balance between the work's components; and
- Accurate conclusion that is consistent to the researched problem or topic.

Title Page

There are some related elements of a scientific work, which are important for its editing and presentation.

Among them are cover, title page, content, bibliography, annexes, indexes, lexicons, and glossaries.

In the page title we place certain work identification elements.

Content

The following elements of a scientific paper are required in the contents:

- Introduction (preliminaries);
- Parts;
- Chapters;
- Subchapters.

They are accurately arranged by pagination. In some papers, the content is placed immediately after the title page, sometimes after an introductory note, sometimes at the end of the paper, after the conclusion.

Bibliography

A bibliography is a systematised list of the bibliographic sources used and cited by the author of the scientific paper.

Examples of bibliographies are listed in alphabetical order and occasionally according to the order of importance.

Annexes

Tables, diagrams, graphics and such like help to express and synthesise both important and less significant details of the paper, such as calculations, and analysis.

They are usually presented at the end of a work and in exceptional cases they are presented in a smaller format than the main format of the scientific paper.

Indexes

There are several types including: alphabetic indexes of notions, concepts and ideas, keywords, and authors.

9.3.2 Presentation of Scientific Results

An important stage in research development is the presentation and demonstration of the results of scientific investigation. In presenting and developing a scientific paper, an outstanding level of accuracy and proof is required; the public must be persuaded by various methods of scientific communication.

The paper presentation has some requirements:

- Plan;
- Free presentation;
- Fluency, vocabulary choice; and
- Academic presentation level.

The value of scientific research performed will be assessed by a commission and its chairman according to an established pattern. Ethical requirements and deontological codes existing in the domain must be observed.

9.3.2.1 Form of Scientific Communication

Scientific communication should be presented in three to five pages and should take ten to fifteen minutes to read. The following will be presented:

- Contribution to the researched topic;
- Research originality and value; and
- Applicability.

9.3.2.2 Information Presentation

A modern form of presenting information such as with Power Point or Prezi presentations.

Suggested Teaching

Warm-Up

What if?

Participants will be offered pieces of paper and writing tools. They will be asked to compose funny, unusual questions starting with: What if? E.g: “What if the rain was green?” or “What if we all had one eye?” after composing the questions, the pieces of paper will be handed to the person on the left of each participant, who will respond to the question in writing. At the end of the activity, students will be encouraged to read the answers to the questions they have received. Ideally, participation would be total.

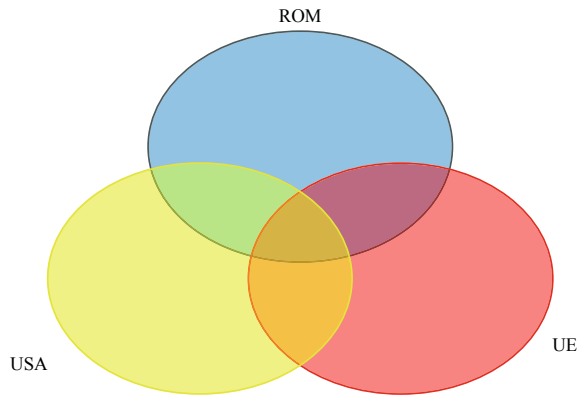
Teaching Activities

After time to capture attention, the teacher will announce the title and objectives of the lesson. The teacher asks the students to explain with their own words what the notion of *plagiarism* means. As he receives answers, the trainer will encourage and write on a whiteboard or flip chart the key words or key phrases from responses received. When responses are exhausted or during the interaction with students, the teacher will thank trainees for their involvement and will define the concept, according to a source with a high level of credibility.

The teacher will use the conversation method and will ask students if they know the origins of the word *plagiarism* and the period or situation when such a situation was first recorded. The trainer will tell the historical story attributed to the authors of ancient Greece, Fidentius and Martialius, and will highlight the period in which *plagiarism* became a recognised concept.

The next lesson activity involves allocation of the participants into four or five groups. They will be given a task of generating a few examples of plagiarism. At the end of the activity, group leaders will read the examples found. The teacher will, if necessary, complete with other situations that are considered to be plagiarism.

The teacher will ask the participants if they know the means of detecting plagiarism. He will use the conversation method in order to highlight existing plagiarism detection tools. The next task of the students will be to analyse the advantages and disadvantages of such tools. Trainees will remain in the same groups and will receive written materials, different for each group containing information on different tools for detecting plagiarism. At the end of the analysis,

Fig. 9.9 Diagrama Venn

the groups will present the text received for analysis, their method and the conclusion of their analysis. The groups will be congratulated and the trainer will offer additions to the analyses of the students, if any.

The following activity has as its objective comparative analysis of European, American and Romanian legislation on intellectual property. The activity will also be done in groups by the Venn diagram method. Students will receive excerpts from the three legal systems then they will read them and discuss in groups, discussing the choices of the characteristics identified.

Each group will draw three intersecting circles on an A3 sheet, as in the model in Fig. 9.9 Venn diagram. The activity is appropriate for systematisation of knowledge or for the restructuring of information extracted from primary sources.

At the intersection of all circles, only the essential and common aspects of all legislation under consideration will be written. In spaces where the circles intersect only two, common points between the systems analysed will be noted. Outside the intersection areas, only the specific aspects of each piece of legislation will be written. The dimensions of the circles in the charts may be different to give each group the possibility contributing their own thoughts.

Instructions on how to work will be front-loaded. The possibility to provide additional information and clarifications, if necessary, will not be excluded. Upon completion of the activity, the results obtained will be placed in places visible to all and will be presented. Finally, all participants will applaud the work they have done.

Review the Knowledge

In order to merge the information transmission activity from Sect. 9.3. *Information communication* with the recapitulation activity of what was taught, a pedagogical

approach will be proposed, focusing both on information systematisation capacities and utilising student creativity.

Students will be given the task to read the information in Sect. 9.3. *Information communication* within the same groups in which they performed the previous tasks. They will then be asked to use all the creativity they can show to create a poster or scientific communication to promote copyright and awareness of risks associated with plagiarism. The structure of the group results presentation will meet the standards found in Sect. 9.3. *Information communication*.

Applications

1. Write examples of ways to plagiarise other than those discussed in the course.

.....
.....
.....

2. Analyse the values and deontological norms that are violated in these examples

.....
.....
.....
.....

3. Explain the possible consequences an individual may incur if it proves that he has plagiarised.

.....
.....
.....
.....

4. What do you think should be the response of people who find plagiarism?

.....
.....
.....
.....

Evaluation

(1): Carefully read the items below and circle the answer you think is correct. The items have only one correct answer.

A. By paraphrasing it is understood that:

- (a) The word order is no longer the same and the source is indicated;
- (b) Copy, shake & paste;
- (c) Patchwriting (rewording);
- (d) All the essential information will be expressed accurately in the same form.

B. Scientific communication:

- (a) Is done according to standard STAS 8660-82;
- (b) Can offer a text without references;
- (c) Has to be dynamic;
- (d) Is a contribution to the research topic.

2: Write down three examples of ethical principles in your area of expertise:

- 1.
- 2.
- 3.
- 4: How do you define deontology?
.....
.....
.....

(2): Carefully read the statements below and indicate their value with true or false. Note the answer to each statement.

No.	Statement	Answer T/F
1.	Duration of a works' copyright protection is identical to the one stated in European Union's directives, meaning 10 years after the author's death	
2.	Structural plagiarism is easy to determine	
3.	The value of scientific research performed will be assessed by a commission and its chairman according to an established pattern	

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Abstract

After completing this learning unit, you will be able to:

- Identify the characteristics of each method;
- Differentiate between types of teaching and learning methods;
- Argue the necessity of the adequacy of a didactic method to the proposed learning approach.

Keywords

Active-participatory teaching methods • Graphical viewing methods • Metacognition facilitation methods • Problem solving methods

Summary

In this chapter we present an overview of pedagogical perspective from which we interpreted teaching information literacy. In order to achieve an effective teaching, we combined the techniques and methods considered classic with the modern ones (Blummer 2009). But the literature highlights that not only the technical aspects of a training determine the achievement of educational goals (Mackey and Jacobson 2007; Harkins et al. 2011). The human resource is a very important factor. Thus we believe that team teaching (teacher and librarian), creating a curriculum designed by a team of specialists information literacy, librarians and experts in teaching and learning are essential to achieve effective teaching learning. This belief was the basis of the collaboration between the authors of this book, combining the different areas of expertise to produce a product that can be considered, hopefully, a useful help to the trainer.

The way we teach is influenced by the way we perceive learning. Learning theories are closely related to IQ theories. The latter highlights the existence of a general intelligence that determines the level of development of learning capacity

(Muijs and Reynolds 2017) as well as the existence of multiple intelligences (Gardner 1987).

One of the most popular classifications of learning theories has as a main criterion the historical period in which these theories and paradigms of psychology emerged. From this point of view, we group the theories of learning into: behavioural, cognitive, humanistic, and constructivist.

The functions that these theories fulfil are:

- **Informational, referential**, giving an overview of the described reality;
- **Explanatory** trying to answer the question of why the phenomenon of learning occurs;
- **Predictive or anticipatory** through which can be predicted phenomena that cannot be explained in themselves;
- **Systematisers** summarising a substantial amount of information in order to make theoretical generalisations; and
- **Praxiological, normative and prescriptive** allowing practitioners to use certain methodological guidelines (Panțuru 2010).

Learning patterns are derived from learning theories. The most discussed are: behavioural models, the direct training model, models centred on information processing, person-centred models, models centred on a social dimension, the mastery learning model, and the modular approach model.

Training models guide the manner of implementing of teaching strategies. Didactical or Educational Strategies are those that designate the manner of pedagogical action, in order to achieve predetermined goals. Depending on the scope of the concept, we find the existence of two types of strategies: the macro type (developed for medium and long time periods) and the micro type (built for short time periods).

Structurally, teaching strategies consist of:

- Models of learning experiences;
- Learners' learning styles;
- Learner motivation for learning;
- **Methods and training procedures used in the didactic approach;**
- The resources available for education;
- Specific information content;
- Particularities of learning tasks;
- Forms of organising the teaching activity; and
- Type of assessment considered (Bocos and Jucan 2008).

10.1 Teaching Strategies

Teaching strategies become appropriate to an educational approach by choosing them according to certain criteria such as:

- The pedagogical conception of the teacher dependent on the paradigms on which he bases his opinions;
- The pedagogical conception of the historical period to which reference is made, the trends in pedagogical practice;
- Didactic principles that delineate the educational process;
- Competencies to be developed;
- Age and pupil's level of schooling;
- Informational specific of the specialised discipline;
- Psychosocial characteristics of the group or class of students;
- The time set for achieving the objectives; and
- The specificity of the school unit to which the class or group of students belongs.

By degree of generality:

- General strategies (used in multiple learning situations or school disciplines); and
- Particular strategies (specific to less generalisable approaches, to specific disciplines);

According to the field of predominant instructional activities and the nature of operational objectives (Iucu 2005):

- Cognitive strategies;
- Psychomotor or action strategies;
- Emotional strategies; and
- Mixed strategies;

By the logic and strategies of student's thinking (Cerghit 2002):

- Inductive strategies;
- Deductive strategies (axiomatic);
- Analogue strategies;
- Transductive strategies; and
- Mixed strategies;

By the level of directive/non-directive of learning:

- **Algorithmic/prescriptive strategies:**
 - Imitative;
 - Explanatory-reproductive (expositive);
 - Explanatory-intuitive (demonstrative);
 - Algorithmic; and
 - Programmed;

- **Heuristic/non-algorithmic strategies:**
 - Explanatory-investigatory (semi-disciplined discovery);
 - Conversation-heuristic;
 - Independent discovery;
 - Problematised;
 - Investigative observation;
 - Inductive-experimental; and
 - Creative;

- **Mixed strategies** (Bocos and Jucan 2008)
 - Algoritmico-heuristic.

10.2 Methods and Training Procedures

The methods and the training procedures used in the didactic approach are elements of a didactic strategy. Although many other structural elements of educational strategy are equally important, field practitioners tend to focus especially on didactic methods as the visible part of the didactic iceberg. We intended to invite the reader of this paper to reflection, presenting very briefly some of the most well-known didactic strategies to discover the importance and interdependence of each element of the strategy with the others.

The method is a term of Greek origin “*methodos*” (“*metha*” translating to *through* and “*odos*” meaning *direction, road*), namely it can be translated by the phrase “the way to”. The didactic method is a way through which the teacher conducts and organises the training of the trainees.

We define the method as “the assembly or the system of processes or modes of execution of the operations involved in the learning process, integrated into a single flow of action, in order to achieve the objectives proposed” (Cerghit 2006, p. 46). The degree of freedom and of directing depends on the pedagogical conception at the core of the pedagogical approach.

It is recommended that the choice of teaching-learning methods to be made according to training objectives, the skills of the trainees and trainer and the information content to be mastered.

At present, pedagogues prefer less structured approaches, ambiguous contexts that allow students to discover by themselves the most appropriate way to introduce new information into their own knowledge systems. Although this orientation is predominant, the student-centered curriculum, literature is abundant in studies that still call into question a student centered approach (Garrett 2008; Sawant and Rizvi 2015; Jacobs et al. 2016).

The functions which teaching-learning methods carry out are:

- **The cognitive function**, representing the way of access to knowledge, and information, necessary for its plenary development;
- The **formative-educational function** through exercising skills, certain motor and psychic functions at the same time as discovering scientific facts;
- The **motivational function** inspiring the student, transforming the learning activity into an attractive, stimulating activity;
- The **instrumental function** allows the method to be positioned between the objectives and the results of the didactic activity, being a working tool, a means to efficiently achieve the plan and achieve the intended purpose; and
- The **normative function of optimising action** is highlighted by the prescriptions, rules and phases that the method brings in achieving the objective (Cerghit 2006).

10.2.1 The Relationship Between the Method and Procedure

Some of the constituent elements of the methods are training procedures. These are required operations chained into a hierarchical and logical structure to ensure the effectiveness of the teaching method. Between the method and procedure there are subordinate relationships, with structural and functional connotations. Sometimes a method can become a procedure if it is used for a short period of time. A relevant example is that of the explanation method. Rarely, the method is used as the main approach of a lesson, but often, regardless of the method used, we use explanation in a training process.

10.3 Classifications of Teaching—Learning Methods

There are various classifications in the literature according to different criteria. Due to the multiple functions that methods can perform as well as the different variants they may have, the rankings in certain categories are relative. Thus, a method may belong to different categories, depending on classification criteria. The most popular classifications have as main criteria: the person/persons on whom the teaching

activity is centered, the type of training/lesson, the type of activity predominantly targeted, the degree of activism/passivity of the pupils, the preponderant means of communication (oral, written).

We continue by presenting a classification of teaching and learning methods, which contains examples of methods in certain categories, without claiming to be exhaustive.

By the criterion of the persons on whom the teaching activity is centered or by degree of student activity:

- **Centred on the teacher—expository methods:**

- Lecture/exposure;
- Story telling;
- Explanation; or
- Instruction.

- **Focused on the interaction between teacher and student**

- Conversation;
- Collective discussion;
- Problem solving;
- Troubleshooting;
- Demonstration;
- Modelling;
- Exercise;
- Case analysis or study; or
- Didactic game.

- **Student centred or active-participatory methods:**

- Methods of organising information and graphic visualisation:

Cube method;
 Method of mosaic or reciprocal teaching;
 Conceptual map;
 Starburst;
 Clusters;
 Diagrams; or
 Training on simulator.

- Methods of stimulating creativity:

Brainstorming;
 Philips 6–6;
 6/3/5 Technique;

SINECTICA; or
Panel discussions.

- Methods to facilitate metacognition:

The Know/Want/Learn method;
Reflective reading;
Walking through the pictures; or
The Learning Log.

10.4 Descriptions of the Methods Used in the Examples in Previous Chapters

Expository Methods:

Lecture

It is considered a traditional, verbal, and exponential didactic method. Although some authors treat the lecture differently from exposure, the great similarities between them lead us to treat them together. Pedagogical practice highlights several forms of lecture according to the age of educators, their life experience, exposure time and scientific discipline: school lecture story, explanation, university lecture, lecture with opponent, and lecture—debate.

Except for the lecture with an opponent, the method involves passing a consistent volume of information in a verbal form in a monologue from the teacher to the students. As it generates a high degree of passivity among students, exposure methods have been strongly criticised but have also experienced improvements following these criticisms.

The school lecture requires the presentation of a series of ideas, theories, interpretations of scientific aspects, allowing the formation of a coherent image of the designated reality.

The story is used predominantly in educational contexts where trainees have limited life experience. It consists in presenting the information in a narrative form, respecting a sequence of events.

The explanation is an presentation in which rational logical reasoning is obvious, clarifying blocks of information such as theorems, or scientific laws.

The university lecture focuses more on descriptive—explanatory presentation of the results of recent scientific research, due to the fact that the particularities of the age and the level of education of the participants is different. The time allocated to it is longer than for the other exposure methods.

Lecture with an opponent involves the intervention of another teacher or a well-informed student by asking questions or requesting additional information. It creates an effect as in a role play that ensures dynamism of presentation.

The lecture—the debate is based on the teacher's presentation of essential information and its deepening through debate with the students. The success of the method is requires that the target audience should have a minimum knowledge in advance.

In an attempt to reduce its limits, several conditions have been observed to achieve a high level of efficiency:

- Information content should be logically connected, essentialised, without redundant information;
- The quantity of information is appropriate to the psycho-pedagogical peculiarities of the educated;
- Use examples to connect theory to practice;
- Use language appropriate to the audience's competency, explaining less-known scientific terms;
- Maintaining an optimal verbal rhythm (approximately 60–70 words per minute) and an intensity adapted to the particularities of the audience;
- Increased attention to expressive elements of verbal and nonverbal communication;
- Maintaining visual contact with the public, adjusting speech according to their reactions;
- Use of means of scientific expression to help communication (diagrams, schemes, or semantic maps);
- Providing recapitulative loops to maintain the logical connection of ideas; and
- Providing breaks or alternating scientific discourse with less formal or fun aspects that allow defocusing and refocusing the audience's attention.

Advantages of a lecture:

- A consistent amount of knowledge can be transmitted within a relatively short time frame;
- Stimulates curiosity and stimulates pupils' interest in the subject;
- It presents a coherent presentation model and manner to systematise a theme and organise information;
- Pupils know modalities to express and express themselves; and
- Students can receive additional information that helps explain the interpretation of a scientific reality.

Disadvantages of lecture:

- Presents fewer formative and more informative links;
- Generates passivity among students;
- Mild loss of attention and boredom;
- Does not allow individualising the pedagogical discourse;
- Induces a high degree of uniformity in behaviour; and
- Few opportunities to check understanding of the discourse.

Conversation

Conversation consists in the didactic use of the questions through in-depth examination of a theme, capitalising on pupils' answers in order to develop the logical reasoning of thinking. The conversation has several forms including: heuristic, examiner, collective discussion, and debate.

In its application, it is necessary to observe several conditions for the method to be considered effective. Thus, the teacher must ensure a socio-emotional climate appropriate to the conversation that will follow, to raise interest in the subject to be debated, to manage the number of participants in the discussion (maximum 20 people are considered optimal), and to allow each member to express their opinion. If the number of participants is higher, it is recommended to build several smaller discussion groups. The teacher will pay attention to the ergonomics of the space, facilitating the settlement of people in a way that they can communicate easily. The arrangement of the participants in a circle is preferable. Also, the teacher will assign the role of discussion moderator, will temper the tendencies of some to monopolise discussions and stimulate the involvement of the more reserved. Students will know the topic under discussion, they will be taught to present ideas in a smooth, appropriate way and allow others to express themselves. The teacher will also give importance to time, so that all the topics proposed are discussed.

Requirements for Formulating Questions:

- (a) To be correctly expressed, logically and grammatically;
- (b) The question contains limited content in need of clarifications, to be precise;
- (c) Questions can be varied: some claiming data, names, definitions, explanations, others expressing problematic situations;
- (d) Giving the necessary thinking time, depending on the difficulty of the questions; and
- (e) Students will be stimulated to ask questions that require complex answers, avoiding those which suggest the answer or have closed answers (yes/no).

Response Form Requirements:

- (a) Be grammatically and logically correct, regardless of the school discipline in which it is formulated;
- (b) The answer is as complete as possible and appropriate to the question; and
- (c) Avoid fragmented, or vague responses.

The heuristic, Socratic, mauevtic conversation was designed to lead to the "discovery" of something new for the learner. Presumes related series of questions and answers at the end of which to shape out, as a conclusion, new scientific facts for the student. Essential in this method is combining questions and answers in compact structures, each new question having as its origin or starting point the answer to the previous question. A disadvantage in its application is the

conditioning of a pupil's knowledge experience, which allows the formulation of answers necessary to the questions that are addressed to him.

Advantages of using the method:

- Flexibility of logical operations, hypothetical-deductive reasoning of thinking;
- Developing the vocabulary, organising ideas in elevated communication structures;
- Forming a personal communication style.

Disadvantages of using the method:

- It is dependent on the student's previous knowledge and experience;
- Lack of interest on certain topics may generate passivism or negativity;
- Difficulty in involving all participants;
- Some important aspects may remain undiscussed.

Methods of Direct and Indirect Exploration

Exercise Method

The method aims to obtain a high level of skill in the use of algorithms, to form or to strengthen a skill or ability. It can apply to any school discipline. The method consists of performing a repetitive and conscious action to learn a performance model or to automate the steps required to achieve high performance.

Depending on the form criterion of the exercise, they may be: oral, written or practical. Given their purpose and complexity, one can distinguish between exercises: introductory (done with the teacher), to consolidate a model of reasoning or movement (performed under the supervision of the teacher or independently), exercises with the role of integrating information, skills and abilities into ever larger systems, creative exercises or heuristics.

In order to achieve the optimal exercise, it is necessary to comply with certain conditions such as:

- Conscious and correct assimilation of the model;
- Using exercises that vary in form, to avoid negative emotions and stiffness;
- Observing the didactic principle of grading the difficulty as far as mastering the previous levels;
- (Self) applying corrective feed back immediately; and
- Use an optimal number of exercises.

Advantages of using the method

The method allows the formation of skills or their consolidation in the shortest possible time, avoiding learning by trial and error. It produces positive emotional

states due to satisfaction through success. Generates growth at a motivational level. It may be the basis for the formation of perseverance and will.

Disadvantages of using the method

It can generate rigidity in learning behaviour, stagnation in learning. If different forms of exercise are not used, it will cause fatigue, the impossibility of identifying similar structures that require the same type of exercises. Not scheduling learning can lead to adverse effects on the maintenance of new information, knowledge or formed skills.

Demonstration

The method consists in condensing the information that the student receives into a concrete object, a concrete action, or the substitution of objects, actions or phenomena.

- a. **Demonstration with objects** involves the use of natural materials (rocks, plants, chemicals) in an appropriate educational context (used in a laboratory or natural environment). This type of demonstration is extremely convincing due to the direct, unmediated character of the lesson.
- b. **Demonstration with actions** consists of a concrete example, not “mimed” by the teacher, along with the teacher’s explanations, followed by student practice.
- c. **Demonstration with substitutes** (maps, casts, sheets, three-dimensional materials) is required when the object, the phenomenon we want to explain, is not directly accessible.
- d. **Combined demonstration**—demonstration through experiences (combination of the above). One form of combined demonstration is that of a didactic drawing, combining the demonstration with action with that with a substitute.
- e. **Demonstration by technical means** using multimedia, audio-visual means, highlighting aspects impossible or difficult to reproduce in another context and that can be repeated many times.

The method requires certain conditions for organising the space where the demonstrations take place (such as opaque curtains, lab, or niche.); special training for the teacher in maintaining the equipment, devices, materials used for this purpose.

Advantages of using the method

- Access to concrete objects or phenomena that cannot be accessed within limits of time and space;
- Using substitutes simplifies, through visualising or schematising, the understanding of the composition of objects or phenomena;
- Can be used for a long time;

- The use of substitutes or technical means is less expensive than originals; and
- Some aspects of reality cannot be reduced to be explained in a teaching environment.

Disadvantages of using the method

- The lack of correlation of this method with the modeling and the exercise may lead to didactic inefficiency;
- Requires special technical equipment;
- Students receive ready-made knowledge, thus not practising independent thinking;
- Use of complicated procedures and pretentious language can distract the student from the essence of the activity.

Modeling

This method can be used to deliver effective models (a simplified reproduction of the original) of action or thought. Uses several procedures:

- **Changing the dimensions** of natural aspects to a usable scale (models, casts);
- **Concretising abstract notions** (use of objects or forms to understand the figures);
- **Abstraction** (rendering by numerical and/ or letter formulas of certain categories of objects, actions); and
- **Analogy** (creating a new object comparable to the structure or functionality of a similar object).

Advantages of using the method:

- Using the model involves activating/energising the student; and
- Allows an efficient way of action.

Disadvantages of using the method:

- Can form rigid behaviours; and
- Insufficient practice of divergent thinking.

The Cube Method

The cube model is ideal for exercising students' analysis capabilities and exploring multiple dimensions of a subject's interpretation. It is based on an algorithm with the following sequences: description, comparison, analysis, association, application and discussion. It is ideal for usage by sub-groups or pairs of students.

Steps:

It is done on a cube that on each of whose faces one of the following operations can be written: describes, compares, analyses, associates, applies, or discusses. It is recommended that the sides of the cube are covered in the above mentioned order, following the steps from simple to complex. If the method is applied to groups of students experienced in the use of such methods, each subgroup, team, or pair may receive a random assignment from the ones listed above.

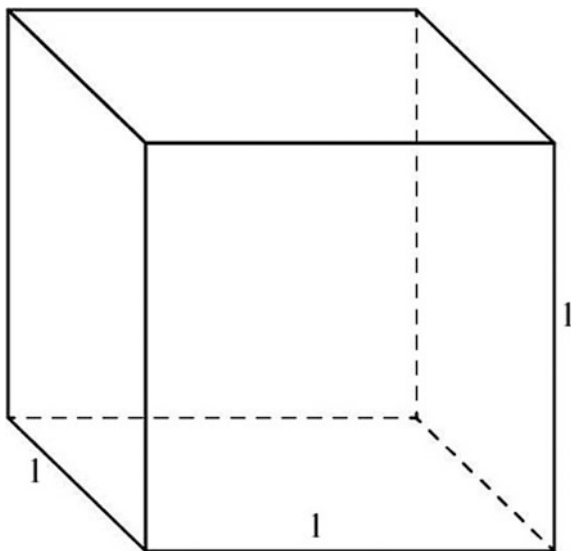
The topic of the lesson or the issue to be analysed is announced. Six activity teams are formed, the activity procedure will be explained. Specify the task of each team, starting from the subject under consideration, the study material shared by all groups. The order of the stages will be kept, therefore: the first team will describe the subject matter in question; the second will compare the subject with that previously learned; the third will associate the central concept with the other; the fourth will analyse the phenomenon, the discussed subject matter, insisting on highlighting the details; the fifth team will highlight the applicability of the theme; and the sixth will discuss cons or pros.

The teams will present the results of their work, they will fill in new details that come up after the discussions. A variation of the method requires that the presentation of the contents of each team to be done within six minutes, giving one minute for each face of the cube. The results are displayed or recorded on the board to be commented by all participants (Fig. 10.1).

Advantages of using the method:

The advantages of this method are the demand for attention and thought, giving students the opportunity to develop the skills needed for a complex and integrative approach. Individual work, working in teams or the participation of the whole class

Fig. 10.1 The cube



in meeting the requirements of the cube is a challenge and results in a race to prove correct and complete assimilation of knowledge.

Disadvantages of using the method:

Requires more rigorous and lengthy training; may not be used in any lessons; information content is smaller; requires increased attention of students; and their ability to make connections and find the answers themselves.

The Mosaic Method

The method is based on group cooperative learning and teaching the acquisition of each team member to each other (intertwining individual and team learning). The mosaic is a method that builds confidence in the participants' own strengths; develops communication skills (listening and speaking); reflection; creative thinking; problem solving; and cooperation.

Steps in engaging the activity

The teacher asks for the formation of teams of four students. Each team member receives a number from one to four. Students are grouped according to the received numbers. They are cautioned not to forget the composition of the original groups. Newly formed teams receive personalised cards that contain parts of larger material (the material has as many parts as the groups are formed). The teacher explains the topic to be addressed. Expert groups analyse the material received, consult each other and decide how to present the information to the members of the original groups.

Experts return to the initial teams and teach the information to others. If, until this stage, the teacher has only the role of monitoring the work of the groups, he can now intervene, clarifying unclear aspects. Teaching will be done in the logical order of material distribution that must coincide with scientific logic. At the end of the activity, a systematisation of the acquired knowledge will be presented before all the groups. The teacher can ask questions to discover the level of understanding the information studied.

Advantages of using the method:

All students contribute to the task. Students practise active listening and cooperate in solving requests. They are also encouraged to discover the most appropriate means of transmitting information and explaining to colleagues. Students are trained in the efficient organisation of working time. Students have freedom to choose their method of learning and teaching colleagues.

Disadvantages of using the method:

One of the biggest drawbacks of the method is the high cost of time. There is a risk that some groups may not finish their tasks in a timely manner and slow the activity of the whole group. It is also possible to generate formalism with pupils being superficially involved in didactic activity.

Problem solving methods

The best-known methods in this category are questioning, problem solving, and learning through discovery. They are based on the creation of a situation, or structures with insufficient data that give rise either to a socio-cognitive conflict, or a cognitive dissonance where the knowledge previously acquired by the student is insufficient or incomplete to solve the difficulty or a problem situation in which the student must apply his knowledge under new conditions. The problem-solving approach is a context in which the student learns something new.

In order for students to become consciously and positively involved in a problematic situation, they must be trained gradually in this educational approach. The teacher is responsible for explaining the problematic situation and providing guidance in solving it. Students, in their problem solving effort: analyse the problem's data; select significant details; find correlations between data; use creative imagination; build solutions; and choose the right solution.

Advantages of using the method

- Stimulates students' interest;
- Exercises the operating schemes of thinking; and
- Stimulates creativity.

Disadvantages of using the method

- Problems may be inadequate for the level of cognitive development and level of student knowledge, thus causing students to withdraw from such situations.

Methods of Information Management and Graphics Visualization:

Conceptual Map

Being able to make connections between acquired knowledge, to organise it in a well-defined structure is just as important as having a lot of complex information. Conceptual maps or cognitive maps are graphical renderings of an information system or concepts in a hierarchical or logical order. They can be used in all three processes: teaching, learning, or evaluation. Depending on the particularities of the trainees and the specificity of the educational discipline, the conceptual maps may be different. For conceptual schematics, circles, stars, and cottages can be used. Single or bidirectional arrows or lines can represent connections. A conceptual map contains at most one or two main themes, 10–15 subtopics, and tertiary subtitles, if there are significant details supporting the structure or relevant examples. The first concepts that are plotted, as well as the relationships between them, are the main ones, then the secondary ones are drawn. If needed, the tertiary ones are drawn. Then the relationships are drawn between them, and words can be used to explain relationships (they are written on the arrows).

It is important to get students to work with them because their construction involves the practice of cognitive operations such as: analysis, synthesis, comparison, systematisation, classification, hierarchy, argumentation, and evaluation. By building these maps, the student actively participates in their own training, seizing the structures that further develop the strength of the links between knowledge, and learning much more easily. Conceptual maps facilitate easy updating of information systems.

In evaluating conceptual charts, account will be taken of the correctness of concepts, the relevance of those identified and the relationships established between them.

Advantages of using the method:

- Facilitates the storage and updating of information systems;
- Visual memory is exercised;
- The imagination, and creativity is exercised;
- Forms logical thinking;
- Usable in several school subjects;
- Can be a pleasant and coherent way of systematisation, and consolidation of knowledge; and
- Are flexible structures that can undergo improvements, and enrichments.

Disadvantages of using the method:

- Requires a high degree of activism and involvement of student's in their training;
- May require mental effort too demanding for some students; and
- Those with a visual learning style are advantaged.

Venn Diagram

This method calls for students' analysis and comparison capabilities, asking for the graphical organisation of information in two partially superimposed circles, which represent two notions, aspects, ideas, processes, or facts to be debated (Marzano 2015). In the overlapping area, the common attributes of the analysed concepts are placed, and in the free parts will be placed the aspects specific only to each concept. They are useful in all stages of the learning process: teaching, learning, and evaluation. Two types of Venn diagrams are commonly used: linear and stack.

Venn linear:

See Fig. 10.2.

Venn in stack:

See Fig. 10.3.

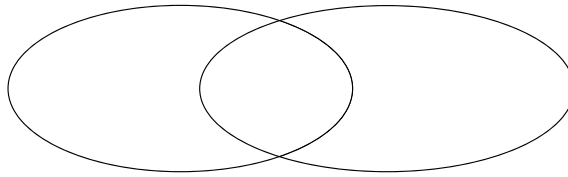
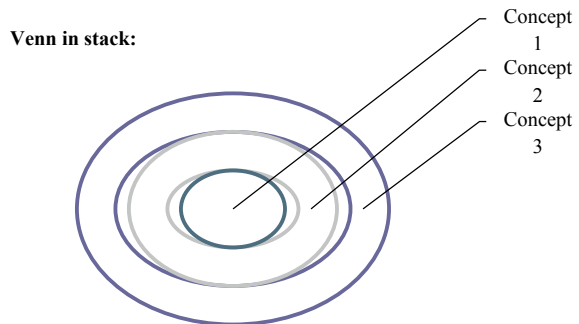


Fig. 10.2 Venn linear

Fig. 10.3 Venn pile



Advantages of using the method:

- Develops the ability to hierarchise concepts;
- Practice ability to grasp relationships between related issues; and
- Exercises the ability to reason.

The Grape Bunches Method

“The grape bunches” method aims to integrate past knowledge and fill it with new information. It is a method that can be used both individually and in groups. It is also a technique that allows connections to be made between concepts. It is useful in recapitulative tasks or knowledge building lessons, in summative assessment of a unit of learning but also in teaching new content, because it allows students to think freely. It can be combined with other techniques or become a technique in another method.

The method involves several distinct steps:

1. Students are informed that they will use the bunch method and how to use it;
2. Groups will be formed, if it is a group activity;
3. The group designates the member who will build the clusters or if the activity is carried out individually, each one will draw the diagram;
4. If the activity is from the front, then the teacher will draw the diagram on the blackboard;

5. The teacher presents the key concept that will be analysed. He presents the chosen way of work, either by free expression or by updating previous contents. The teacher asks students to make connections between the concepts, phrases or ideas produced by the key term or central issue through lines or arrows, thus building up the cluster structure;
6. If it is a pairactivity, desk mates or teams will consult and work out the result of their work; and
7. The final results are discussed in front of the class, a question mark is added to incorrect concepts, necessary explanations are given and the final result is corrected. Also, trainees are invited to create new connections with aspects not taken into discussion.

The role of the teacher is to organise, monitor and support students' work, to synthesise the information they receive, to ask questions and request additional information and to stimulate the production of new links between concepts or new ideas.

Advantages of using the method:

- Developing cognitive capabilities for interpretation, identification, classification and definition;
- Develop reflection, evaluation and self-assessment capabilities;
- The method encourages the participation of all students;
- Evaluate each student's way of thinking;
- Stimulates students to make connections between concepts;
- It is a flexible method because it can be used successfully to evaluate a content unit, but also during teaching;
- Stimulates student's logical thinking;
- Increases learning efficiency (students can learn from each other); and
- The method helps the teacher to assess the extent to where students are relative to curriculum standards (Fig. 10.4).

Disadvantages of using the method:

- Students can deviate from the topic discussed since it is a method that is based on creativity;
- The method takes a long time to process ideas; and
- There is a possibility for each student not to actively participate.

Tree Schemes

These may be horizontal or vertical. Among the horizontal ones we mention: horizontal cause—effect type; situation—problem—explanation type; and classification type. Some of the best-known vertical tree schemes are Tree of Ideas and Concept Tree.

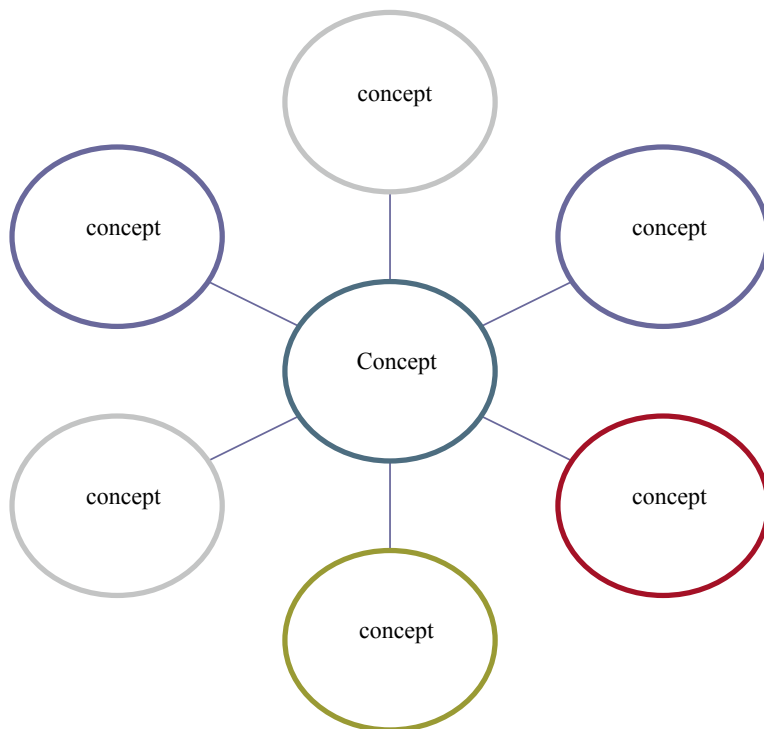


Fig. 10.4 Bunch method

Starbursting

The method is considered a method of information management and graphic visualisation. It is a useful method in problem solving and one to stimulate the creativity of the trainers, similar to brainstorming. The difference is in the organisation of known information according to some key questions.

Procedure:

Write the issue or concept that will be debated on a whiteboard or flip chart and frame in a star. The teacher adds as many questions as possible to that concept. Each question will be framed in one star. Initial questions used will be essential questions, such as: who; what; when; where; and why; which may then give rise to other complex questions (Fig. 10.5).

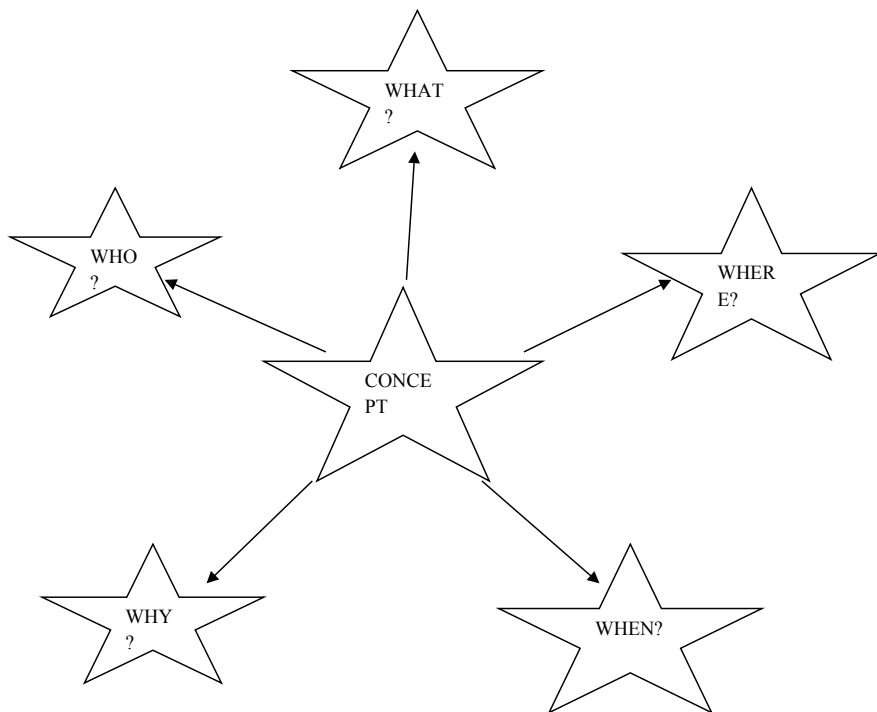


Fig. 10.5 Starbursting method

The method involves several distinct steps:

1. Proposing the problem, and the concept;
2. Organising the class in several subgroups, each of them stating the problem on a sheet of paper;
3. The elaboration in each group of a list of various questions related to the issue to be discussed;
4. Communicating the results of the group activity; and
5. Highlighting the most interesting questions and appreciating teamwork.

Advantages of using the method:

- This is a method considered by students to be relaxing and enjoyable;
- Stimulates individual and group creativity, the manifestation of spontaneity;
- It is easy to apply, suitable for many types of student groups with different psychoindividual characteristics;

- It develops the spirit of cooperation;
- It creates the possibility of contagion of ideas;
- Develops teamwork skills;
- Stimulation of all participants in the discussion; and
- There is no need for elaborate explanations, as it is very easy to understand by all students.

Disadvantages of using the method:

- It takes a long time for application; and
- Lack of involvement from some students.

Methods to Facilitate Metacognition:

The “I Know/I Want to Know/I Learned” method

The method consists in valuing previous experience of the subject matter and discussing the prerequisites. The premise behind this method is to reconsider students’ previous or pre-requisite knowledge when introducing new insights. It can also be an excellent formative assessment of the lesson, an instrument for stimulating metacognition, but also a means for the teacher to get feedback on the understanding of new knowledge by students.

Method of implementation:

- Presentation of the theme of the activity;
- Dividing the class of students into sub-groups;
- The teacher distributes the support sheets and asks students to inventory everything they know about the subject;

KNOWN	WANT TO KNOW	LEARNED

- Students fill in the columns “KNOWN” and “WANT TO KNOW” of the worksheet table. In the column “KNOWN”, students will add all known aspects related to the subject matter under discussion. In the column “WANT TO KNOW”, those questions that arise in relation to the subject under consideration will be passed. Questions are identified as having an important role in guiding and personalising reading;
- Individual reading of the text;
- Fill in the column “LEARNED” in close connection with previously asked questions, highlighting those who receive such an answer;

- In the next step, students will compare the results of the three analysis fields; and
- Final discussions and drawing conclusions in a plenary.

Advantages of using the method:

- Active reading from students;
- Development and exercise categorisation capacity;
- Increasing the motivation of students to engage in activity;
- Stimulating students' creativity; and
- Good retention of the information presented during the course.

Disadvantages of using the method:

- Difficulties can arise in formulating proper questions about the topic being debated;
- The teacher must exercise the roles of organizer and facilitator in order for the activity to be accomplished and to achieve its objectives; and
- May be demanding and tiring for younger participants.

Methods of Stimulating Creativity:**Brainstorming**

The method stimulates students' productivity and creativity. The basic principle of the method is "quantity generates quality". By using this method students are encouraged and requested to participate actively avoiding the beaten path. Brainstorming facilitates exercising capabilities to critically analyse real situations, a random association that allows discovering unpredictable sources of inspiration, and making decisions about choosing the most appropriate solutions. This way, creativity is practised and allows a person to express himself genuinely. It has a beneficial effect on interpersonal relationships among the group of students.

The method's steps:

1. The theme is chosen and the task is announced;
2. Students are asked to express as quickly, as concisely as possible all ideas as they come to their mind in solving a problem situation. They can associate with the ideas of their colleagues; they can take over, complete or transform their ideas. Any kind of criticism is prohibited, not to inhibit creative effort. The principle governing activity is "quantity generates quality";
3. All ideas are recorded;
4. Leave a few minutes to "settle" ideas that were given and received;
5. The ideas issued are repeated, and students build criteria to assemble concepts given by categories, and key words;

6. The class of students is divided into subgroups, according to ideas, for debate. A variation at this stage is a debate in a large group, critically analysing and evaluating ideas; and
7. The results of each subgroup are communicated in varied and original forms such as: schemes, verbal constructions, images, songs, mosaic, and role-plays.

Advantages of using the method:

- It stimulates creativity;
- The development of critical thinking and the ability to argue;
- The development communication skills;
- Active participation of all students/learners;
- Low application costs, broad applicability;
- Enhancing the self-confidence and the spirit of initiative of a student; and
- The development of a positive educational climate.

Disadvantages of using the method:

- Time-consuming;
- Success of the method depends on the moderator's ability to lead the discussion in the desired direction;
- It can be tedious and demanding for the participants; and
- It proposes possible solutions to solve the problem, not an effective solution.

Applications/Exercises

1. Try to build a conceptual map of this chapter.
.....
2. Build a new classification of training strategies. Specify the classification criteria.
.....
3. Analyze the place and role of teaching methods within the training strategy structure. Specify the relationships with other elements.
.....
4. Perform a SWOT analysis of one method, at your choice.

Strengths	Weaknesses
Opportunities	Threats

Evaluation

Write a short essay on the subject: *Didactic methods between normality and creativity.*

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