

# 21ST CENTURY SKILLS: SOME PEDAGOGICAL APPROACHES AND REFLECTIONS IN A POLYTECHNICAL SUPERIOR SCHOOL

Inês Braga

*CIC.Digital / CITCEM - University of Porto and CEOS - Polytechnic Institute of Porto*

## Abstract

This analysis of the post Bologna Declaration Portuguese Higher Education System (from 2006) will highlight that despite the mandatory adjustments such as reducing the length of study cycles this system has not yet succeeded in creating curricula that visibly reflect the development of the skill for academic and professional survival in the 21<sup>st</sup> century. Exceptions can be found and it is likely that transversal work exists within the courses. It is, however, strongly dependent on the training and awareness of its faculty, whereas the ideal setting would be that the training of such skills was in curricula.

Upon conducting the literature review, the theoretical basis for this paper is anchored on Standards and on Information Science organizations' studies on Information Literacy such as those of the American Library Association (ALA) – e.g. *Information Literacy Competency Standards for Higher Education* (ALA, 2000), *Standards for the 21st Century Learner* (ALA, 2007), *Learning 4 Life: The National Plan for Implementation of Standards for the 21st Century Learner* (2008). Within the context of the information society, of the constantly emerging information and communication technologies, and of the participatory culture we find the research of Henry Jenkins and co-authors - *New Media Literacy White Paper. Confronting the challenges of participatory culture: media education for the 21st century* (2006) and the more recent *Skills for Today Research Series* (P21, 2017) noteworthy.

The data presented is the result of a research carried out within Porto Polytechnic in a scope comprising courses from diverse scientific areas. The data illustrates the contrast between a) the perception of teachers and students indicating that Information Literacy (IL) skills are fairly well developed within the training process and b) the results of IL tests applied to students being mostly negative.

This paper reports some teaching and learning experienced by an Information Science and Communication teacher hoping it may help improving the adoption of pedagogical strategies that can motivate and potentiate a more effective development of IL skills.

We believe that, in addition to an institutional involvement by management, faculty, librarians and, first and foremost, students, in this complex collaborative task of formation, these reflexions will contribute to make these individuals in the process of training more autonomous, critical, responsible, active and successful as students, workers and citizens.

**Keywords:** skills, students, training, innovation, citizenship

## 1 INTRODUCTION

This research focuses on competences, which are related to Information Literacy (IL) and higher education. The empirical study carried out calls for a reflection on how to promote the inclusion of these competences in a Portuguese Polytechnic Higher Education Institutions in motivating and interesting way.

In compliance with the Bologna determinations, the School of Management and Industrial Studies of Porto Polytechnic restructured undergraduate programmes from 5 to 3 year cycles. The research, carried out by an in-house faculty member and researcher, included eight degrees from various scientific areas; i) Accounting and Administration; ii) Human Resources; iii) Science and Technology of Documentation and Information, iv) Hotel Management and Administration, v) Design vi) Engineering and Industrial Management, vii) Mechanical Engineering and viii) Biomedical Engineering. [1]

A wide number of renowned institutions, alongside several international IL studies, have long established by that IL core competencies are paramount to the upbringing/education of well integrated and successful of citizens in this multilayered 21st century.

As far back as 1946, the United Nations Educational, Scientific and Cultural Organization - UNESCO, has had a prominent role in the pursuit of this goal as the pioneer organization working globally and sustainably for the sake of literacy, upholding the basic right of every human access to education, allowing the improvement of livelihood and an active participation in society. As proof of this commitment and endeavor, the UNESCO website displays a tab specifically called 'Literacy', where it includes a list of actions carried out under the title "Five decades of literacy work".

There is a worldwide increasing effort by governments, non-governmental organizations, Ministries of Education, various higher education institutions, teachers, librarians, educators and families to increase the levels of literacy and skills of individuals.

This development effort goes beyond the individual per se, comprising cultural, social and economic dimensions and determining countries' level of progress - as highly skilled citizens will have a better performance in the current digital society, hence being more informed, better workers and more active citizens.

Alas, the principle of Education for All has fallen short in underdeveloped or belligerent countries despite all efforts. Children, young people, and adults of the so-called "developed" societies already enjoy the benefits of having these skills formally integrated in the education system, as well as the pedagogical practices promoting more, better, and more adequate skills for successful survival in this overwhelmingly digital world.

Paradoxically, when it comes to the higher education system, although Bologna presupposes the development of multiple competences, the shortening of study cycles seems to have taken time and space for this process to flow properly, visibly formal and with more positive results.

## 2 METHODOLOGY

The methodology of this study has two distinct components: a) the investigation carried out in the aforementioned Polytechnic HEI on IL, the development of student competences and of teaching practices; b) sustained by the results of the empirical study in said formal teaching context, a shared reflection on pedagogical practices that the researcher / teacher has adopted over several years in the areas of Information Science and Communication and which, according to the state of the art, will be good practices for the development of the main skills required in the current knowledge society.

Upon the literature review, we should like to highlight some studies such as a good practice carried out in the United States involving several entities that created the *Common Core State Standards* - "State education chiefs and governors in 48 states came together to develop the Common Core a set of clear college- and career-ready standards from kindergarten through 12th grade in English language arts/literacy and mathematics" [2]. These standards, which aim to adequately prepare students for entry into higher education or the labor market, have been the result of a collaborative work, counting on the contributions of teachers, parents, school administrators, experts and state leaders.

Also in USA, The Partnership for 21st Century Learning – P21, founded in 2002, as a coalition integrating entities as business community, education leaders, and policymakers, aims to leverage a national dialogue on the importance of 21st century skills for all students, ensuring that children and young people are ready to lead and face the challenges of this century.

Under the P21's Framework for 21st Century Learning [3], placing the skills of the 21st century at the center of the teaching-learning process is a priority built on the efforts of teachers, education specialists, and business leaders and its application has been widely adopted in American and foreign schools. This document identifies the skills, knowledge and expertise that 21st century students must hold to be successful in the sphere of work and life, we highlight three major areas: i) Learning and Innovation Skills, ii) Information, Media and Technology Skills and iii) Life and Career Skills.

Learning and innovation skills are a distinguishing factor among students who are or are not adequately prepared to live and survive in increasingly complex life and profession contexts in today's society.

In this framework, the development of the competencies designated as the 4 C's - Creativity and Innovation, Critical Thinking and Problem Solving, Communication and Collaboration are determining for an adequate preparation of individuals for the future (which is already present).

Today we live in a society where information abounds - to the point of exaggeration of info pollution-, where there are vertiginous technological changes and where individuals have new possibilities to collaborate with others and to give individual contributions like never before. In this new scenario, it is imperative that citizens and workers have the skills that enable them to create, evaluate

and use information, media and information technology, thus valuing the *Framework for 21st Century Learning* respectively, Information Literacy, Media Literacy and ICT Literacy.

In the context of Life and Career Skills, students have the need to develop thinking skills, content knowledge, and social and emotional skills to move in the complexity of life and work contexts, and we highlight some of the competences mentioned in this document and they must hold such as flexibility, initiative, leadership, responsibility as well as social skills.

In this dynamic, although technical skills - hard skills have to be mobilized, others also have to be called - soft skills. Swiatkiewicz distinguishes between them but states that they must necessarily be conjugated. Hard skills or technical abilities are technical skills, acquired in contexts of professional and academic training, or experiences lived by individuals; they also cover the administrative procedures related to the scope of activity of organizations [4].

As for soft skills, the author lists some synonyms such as "employability skills, critical abilities, generic skills, transferable skills, key skills, cross-skills, non-academic skills, people skills" and defines them as "transversal" skills "Human", "non-academic" or those required for entry and maintenance into the labor market. The author still integrates moral skills in this group.

According to the technological advances that affect individual habits and reconfigure social relations, new types of competences emerge, often associated with different names of Literacy. We highlight Henry Jenkins and four coauthors who speak about new media literacies, defining them as "the set of cultural competencies and social skills that young people need in the new media landscape. Participatory culture shifts the focus from individual expression to community involvement" [5]. They focus on young people and identify a set of social and cultural competencies that will enable them to perform actively, creatively and ethically in the so-called participatory culture. Amongst others, it is worth mentioning the capacity designated as "play" and examples of good pedagogical practices are the adoption of play strategies that develop competences to be applied later in serious tasks, of greater civic and social commitment. Others are the abilities to simulation, to multitasking, and to contribute to collective Intelligence and networking, all encompassing cognitive, social, and information domain dimensions.

We return now to the already mentioned concept of Information Literacy to contextualize and present one of many possible definitions, since it was the basis of the empirical study carried out at the polytechnic college under study.

Thus, the Chartered Institute of Library and Information Professional – CILIP [6] concerning the concept, currently the target of our attention, states that "Information literacy incorporates a set of skills and abilities (...) how to discover, access, interpret, analyse, manage, create, communicate, store and share information. (...) the competencies, attributes and confidence needed to make the best use of information (...) critical thinking and awareness, and an understanding of both the ethical and political issues associated with using information." The importance and impact of IL is referred also in this same document in several important life contexts, such as Everyday life, Citizenship, Education, Workplace and Health.

In addition to the definition presented, we refer some guiding documents on IL and emphasize the need to provide individuals of this century with IL competences (which coincide with some of the above mentioned), since it is essential for them to be informed and to have success in life. We quote some of the standards published by American Library Association - ALA in the years of 2000, 2007 and 2008 and that have been the basis of our empirical research, such as *Information Literacy Competency Standards for Higher Education* [7], *Standards for the 21st Century Learner* [8] or *Learning 4 Life: A National Plan for Implementation of Standards for the 21st Century Learner* [9].

Through a comparative analysis of these standards on IL and having verified the existence of common skills in these and other international reference documents, we have started from this base (of the repetition of certain skills) to select some of them, in order to investigate how they were developed in the aforementioned polytechnic institution : *i)* Autonomy in learning, *ii)* Teamwork, *iii)* Critical Thinking, *iv)* Communication of information, using the appropriate means *v)* Safe, legal and ethical use of information and technology, *vi)* Searching information for troubleshooting, *vii)* Evaluation of the quantity, quality and relevance of the selected information.

In order to observe if higher education contributes (and in what ways) to the increase in the levels of Information Literacy (IL) of the students, we have made documentary analyzes of the curricular plans and curricular programs of the courses to verify the presence of IL training and we questioned the main actors of the teaching-learning process on IL.

We also mention some specific objectives of the research: to analyze *i)* the perspective of students and teachers on Information Literacy; *ii)* the way of integrating information literacy training into formal learning and *iii)* the behavior of students of different scientific areas in solving information problems, although not all of them are considered in depth.

According to the state of the art, we formulated two hypotheses: *i)* The training received during the degree improves the IL skills and *ii)* The teaching of subjects related to Research Methodology increases the information literacy skills.

The protagonists that we deliberately have chosen to give a living testimony of their higher education experience, they are those who are involved in the formal training process, corresponding to a sample of 506 students from eight undergraduate degrees (1st and 3rd years), 77 teachers of these courses, eight course coordinators of these same degrees and the librarian of the institution. Questionnaires (online) were administered to the teachers and students, while the 8 Course Coordinators and the librarian have been interviewed.

The questionnaires of teachers and students contained some common questions to allow comparisons between the perspectives of the different actors involved in the teaching-learning process on the same themes.

### 3 RESULTS

#### 3.1 Some results of the empirical study and the confirmation of hypotheses

We present below some results related to IL's degree of development in the students, following the teaching-learning process. According to the perspective of teachers and students, all seven IL skills selected for this study (and already mentioned above) are fairly well developed (average of 4, according to a Lickert scale, where 1 is the lowest value and 5 the highest value of the scale). We observed that the highest values are of the teachers, and for some skills there were statistically significant differences between both groups of respondents.

From the perspective of the students, the competences they consider, on average, more developed in the teaching-learning process, in descending order of importance are: *i)* Autonomy in learning *ii)* Teamwork, *iii)* Critical Thinking, *iv)* Communication of information, using the appropriate means *v)* Safe, legal and ethical use of information and technology, *vi)* Searching information for troubleshooting, *vii)* Evaluation of the quantity, quality and relevance of the selected information.

Teachers perceive that skills most developed are: *i)* Critical thinking development; *ii)* Information research for problem solving; *iii)* Autonomy in learning *iv)* Teamwork; *v)* Safe, legal and ethical use of information and technology *vi)* Evaluation of the quantity, quality and relevance of the selected information and *vi ex aequo)* Communication of information, using the appropriate means.

Although the selection is not coincident between the two groups of respondents, it is observed that Autonomy in learning and Critical Thinking are indicated by teachers and students in the ranking of the three most developed students in the teaching-learning process.

In contrast to a fairly good perception by teachers and students of the degree of IL development of students, IL test results are generally quite negative and symptomatic of having to invest more in formation for IL. Thus, with the total of the test being 14 values, the average of the results obtained by the 1st year students is 4.76, while the 3rd year students get an average of 5.79. All students in both years reach an average of 5.15.

Considering all the courses, there is only one that stands out for the positive - Science and Technology of Documentation and Information. The students of this degree in the area of Information Science were the only ones that reached a positive average (8,16) and it is in this course that the highest and lowest result is registered, respectively 4 and 14 values. The average obtained by the 3rd year students of this course is 9.21 and 1st year students have obtained an average of 7.52.

Checking statistically significant differences between this and other undergraduate degrees, these results remind us that this course, whose main scientific areas are Information Science and Informatics, is also one which has more scholar disciplines related with research methodologies and IL subjects in its curricular plan and a transversal pedagogical approach on aspects related to these issues. Based on this and other results from the research, the 2nd hypothesis formulated- The teaching of subjects related to Research Methodology increases the skills of information literacy - is thus validated.

Comparing the test results obtained by the 1st and 3rd year students, it is also observed that in the overwhelming majority of the courses, the 3rd year students perform better than the first year, which, together with other results from the research, comes corroborate the hypothesis that the training received during the degree improves the information literacy skills.

### **3.2 Some pedagogical approaches that can enhance the development of skills**

In view of these negative results, and to increase the mastery of certain IL skills, we believe that the aim is to provide formal training for IL, and that a motivating pedagogical framework must exist and that, several of the skills described and others must be worked from a practical point of view.

Shifting the focus from teacher-centered teaching to learning protagonists - students - by making them active and participatory in building their knowledge is a priority and in line with Bologna's assumptions.

Next, some pedagogical experiences will be shared by the researcher, as a teacher, making references to some of the skills that, in this way, will be developed in the students.

It is based on a review of the literature and on the narrative of inspiring pedagogical strategies that have been carried out with close teaching-learning dynamics, variables according to the different types of students, the year of schooling, the scientific area, the subject under study and the objectives of the discipline.

It is a frequent strategy that pedagogical strategies are not only theoretical introductions but that, in the context of the themes under study, there is a practical approach, close to the students' experiences. Thus, by developing oral communication skills, on the subject of various topics, the teacher requests the sharing of experiences of the students, either from the perspective of professionals (in the case of student workers) or from the perspective of ordinary citizens and users of Information Services or other organizations. For example, problem-based, and issues are posed: "As a librarian, what steps would you take in your library to attract more users and retain existing ones?" or "In the perspective of an information service user, how did you proceed and how did proceed the professionals who welcomed you in the situation X, Y, Z?"

In several courses, the promotion of autonomous research and the presentation of cases occurring in the Media on subjects of interest to be developed in class context, for example the issue of plagiarism and information ethics, is promoted. In an attractive way, students are invited to search for scandals related to plagiarism, in the areas they understand, and then we promote oral presentations, based on powerpoints presented in the class on the subject. Thus, we promote contact with ICTs and the Media, always alerting students to the need to refer to the consulted sources. In this way are called transversal skills that develop the critical spirit or, if we want, the so-called moral skills.

In the scope of sensitization to the research of information in diversified and reliable sources, autonomous research is encouraged, with individual worksheets in the classroom and monitoring of the works in an interdisciplinary perspective (eg. in answers that imply a foundation based on the revision of the literature, very close monitoring of the application of citation standards and bibliographic references. Here are developed skills related to the evaluation of the quantity, quality and relevance of the selected information, safe, legal and ethical use of information and technology and autonomy in learning.

The preparation of practical exercises takes place after being taught contents on how to structure research works, scientific articles and bibliographic references, citations, preparation of bibliographies or cataloging, according to national and international standards. Activities are developed to confirm that knowledge has been acquired and to develop skills related to the critical spirit. Students are invited to choose good or bad examples of the subjects being studied - for example, papers or digital books, theses, scientific articles and critical comments on: the structure of books in paper format, on the structure and contents of articles with scientific quality, bibliographical reference exercises, citation exercises, elaboration of bibliographies and cataloging.

Group work promotes several of the mentioned competences, such as Teamwork, Searching information for troubleshooting, oral and written communication skills, since the students must present a written version of the works and present them to classmates through powerpoint. In this way, critical thinking is also called since the self and heteroevaluation is promoted, encompassing several items such as: correct presentation of the powerpoint, security of the presenters in the speech, be it at the level of the posture, or at the level of verbal fluency, interaction among the different members of the group, among others. In turn, the teacher gives feedback and points out aspects to improve and allows to introduce them in the final written version.

Interdisciplinary work is also done, saving time for students who do not scatter so much, diversifying research on different subjects. There are examples of disciplines such as Research Methodology, which have evaluated methodological and formal aspects such as correct work structure, quotations and bibliographical references in other works. The skills developed are safe,

legal and ethical use of information and technology, searching information for troubleshooting and evaluation of the quantity, quality and relevance of the selected information

Simulations or *role playings* are promoted in communication disciplines, in which students embody the role of different organizational collaborators, being invited to write equal messages to different audiences, in different formal and informal contexts and in different media (classroom, telephone, mail, etc.). Here, in addition to oral and written communication skills, creativity is sought through the freedom that students have to create fictitious organizations and concrete situations, often, corresponding to problems to be solved. This *role playing* is produced in video, being valued aspects related to props and also self-assessment and hetero-assessment is carried out at the moment of the oral presentation of the works.

In order to make teaching approaches more real, authentic documents - provided by the teacher, for example, institutional advertisements of banking institutions, minutes, business letters, host manuals, procedural manuals, information available on web sites and information about institutions of reference, in the field of studies, books and magazines are also explored with students. At other times, students are invited to research and present these documents/information to the class, providing critical comments on the subjects under study, which develops the critical spirit.

Inevitably, in a context in which the Y generation lives, the school has to approach the technological tools and resources used by students. For this reason and encouraging a b.learning type teaching, moodle, the institutional platform, is used as information vehicle, as a repository of didactic material produced or made available by the teacher and place of publication of student work.

In the class, different sites are consulted, some of which are suggested by the teacher, in which the research of interest is exemplified and the research done by the students is carried out: library catalogs: ISCAP university library and shared catalog of the P Porto, National Library of Portugal, RCAAP digital libraries, university scientific repositories -Politécnico do Porto, Uporto, Uminho, scientific portals like a b'on, important publishing houses. This strategy develops skills such searching information for troubleshooting, and evaluation of the quantity, quality and relevance of the selected information.

Video viewing is also used to spread organizations of excellence and best practices, award-winning libraries at the architectural level, testimonials of professionals and users of information services or other organizations of excellence are also used, with oral reflections shared in the class, from oral or written questions, which develops critical thinking and communication skills.

Finally, contact with professionals specialized in certain subjects, such as the librarian, encouraging to use resources such as free bibliographic reference software (zotero) or training for the use of library resources or scientific repositories of quality.

## 4. CONCLUSIONS

Although there is a growing awareness of the importance of core skills, there is still a lot of work to be done, both in the most disadvantaged societies and with fewer opportunities, and with certain fringes of the population of the more developed societies. Let us remember the elderly population, low-income individuals, ethnic minorities, expatriates, the unemployed or people with special educational needs. The training work for IL must be continuous, according to the motto of lifelong learning, as advocated by the Declaration of Alexandria.

And in economically and socially more favorable contexts if IL's development of skills has grown over time, it is still not enough to radically combat the info-exclusion of less literate and even those who, although able to read, write and count (basic operations of literacy) may not be considered "infoliterate". The fact is that if today's networked society brings together those who have access to it, paradoxically, it also excludes those who do not have access to technologies and internet and requires, as we have seen, a wide range of skills, for a survival in personal, social and work life.

Thinking about the formal contexts of learning, training for IL and the development of skills considered essential for the harmonious development of individuals should be precocious, as in the USA. In addition, there must be economic, political and educational conditions that can be the basis for joint actions at the national level, under the Ministry of Education, giving a more explicit visibility to IL training, namely its integration into the plans curricula and with a useful and motivating application in terms of the educational needs of the students, for example in the context of carrying out research work.

In addition to the scarce actions that are usually promoted for the development of IL competences, usually a reception session in the library for 1st year students at the beginning of the

school year, these and other training actions are neither obligatory nor object which undermines their importance to students. As for teachers, although some may consider this subject to be important for their subjects, they have little time to devote attention to it, since the shortening of study cycles and demanding programs do not allow for misuse of the subject matter of the scientific areas nuclear weapons. According to a misconception, some teachers assume that students already master or must master certain IL competencies when entering higher education, not feeling responsible for working in their disciplines or collaboratively, neither developing interdisciplinary work with other colleagues or with librarians.

It is proven in the state of the art that the increase in IL competencies of the students is greater if the training for the IL is a continuous action and accompanied throughout the education path, that the IL must be formally integrated in the curricular plans and, in our opinion, should be subject to evaluation, explicitly holding students, teachers and all those who collaborate in the training project. At the same time, institutions will be able to offer complementary and non-compulsory training as a reinforcement of a training plan that should be well planned, supported by the management bodies and be given adequate visibility in the academic context, for example through marketing.

Finally, in order to form, in an appropriate and pedagogically motivating way, using the new TCI, the trainers - teachers from different areas, librarians and other educational agents - must have the necessary technological resources and training, which can be consolidated through lifelong learning. It is up to them to be the intermediary of the educational process, giving the students the main role, encouraging them to be active, participative and autonomous, but also accompanying them, knowing their interests and making useful proposals.

In this complex training process, it is especially important to enable students to take advantage of 21st century competencies, thus demonstrating that their academic life can be more successful, in the workplace they can be professionals of excellence and, in society, citizens more active and responsible.

## REFERENCES

- [1] I. Braga, *A LITERACIA DA INFORMAÇÃO NO ENSINO POLITÉCNICO: competências e práticas numa Escola Superior* [Tese Doutoramento em Informação e Comunicação em Plataformas Digitais]. Porto: Faculdade de Letras da Universidade do Porto, 2014. Consulted in 1-3-2018. Retrieved from <https://repositorio-aberto.up.pt/handle/10216/76099>
- [2] Common Core State Standards Initiative, *Common Core State Standards: Frequently Asked Questions*. Consulted in 20-4-2018. Retrieved from <http://www.corestandards.org/wp-content/uploads/FAQs.pdf>
- [3] Partnership for 21st Century, *Learning P21's Framework for 21st Century Learning*, 2016. Consulted in 2-4-2018. Retrieved from [http://www.p21.org/storage/documents/docs/P21\\_framework\\_0816.pdf](http://www.p21.org/storage/documents/docs/P21_framework_0816.pdf)
- [4] O. Swiatkiewicz, Competências transversais, técnicas ou morais: um estudo exploratório sobre as competências dos trabalhadores que as organizações em Portugal mais valorizam; Soft, hard, or moral skills: an exploratory study on the workers' skills that organizations in Portugal appreciate most, *Cad. EBAPE.BR*, v. 12, nº 3, p.663–687, 2014. Consulted in 22-4-2018. Retrieved from <http://www.scielo.br/pdf/cebape/v12n3/v12n3a08.pdf>
- [5] H. Jenkins [et al] – *New Media Literacy White Paper. Confronting the challenges of participatory culture: media education for the 21<sup>st</sup> century*. MacArthur Foundation, 2006. Consulted in 30-7-2009 Retrieved from [http://digitalllearning.macfound.org/atf/ct/%7B7E45C7E0-A3E0-4B89-AC9C-E807E1B0AE4E%7D/JENKINS\\_WHITE\\_PAPER.PDF](http://digitalllearning.macfound.org/atf/ct/%7B7E45C7E0-A3E0-4B89-AC9C-E807E1B0AE4E%7D/JENKINS_WHITE_PAPER.PDF)

[6] Chartered Institute of Library and Information Professional, *Definition of Information Literacy*, 2018. Consulted in 15-4-2018. Retrieved from <https://archive.cilip.org.uk/sites/default/files/media/document/2018-04/ildefinitioncilip2018.pdf> 2018

[7] ALA, *Information Literacy Competency Standards for Higher Education*, 2000. Consulted in 10-3-2018. Retrieved from <https://alair.ala.org/bitstream/handle/11213/7668/ACRL%20Information%20Literacy%20Competency%20Standards%20for%20Higher%20Education.pdf?sequence=1&isAllowed=y>

[8] ALA, *Standards for the 21<sup>st</sup> century Learner*, 2007. Consulted in 30-10-2008. Retrieved from [http://www.ala.org/ala/mgrps/divs/aasl/aaslproftools/learningstandards/AASL\\_Learning\\_Standards\\_2007.pdf](http://www.ala.org/ala/mgrps/divs/aasl/aaslproftools/learningstandards/AASL_Learning_Standards_2007.pdf)[http://www.ala.org/ala/aasl/aaslproftools/informationpower/InformationLiteracyStandards\\_final.pdf](http://www.ala.org/ala/aasl/aaslproftools/informationpower/InformationLiteracyStandards_final.pdf)

[9] ALA, *Learning 4 Life: A National Plan for Implementation of Standards for the 21<sup>st</sup> Century Learner*, 2008. Consulted in 10-3-2018. Retrieved from <https://robertoigarza.files.wordpress.com/2009/04/gui-implementation-of-standards-for-the-21st-century-learner-guide-for-school-library-programs-ala-2009.pdf>