

ICT in the service of the EEDD in the teaching of SVT at the qualifying secondary level, common core

Saida EL OUAZI, Mourad MADRANE, Rachid JANATI-IDRISSI, and Mohamed LAAFOU

Interdisciplinary Laboratory of Research in Pedagogical Engineering (LIRIP), École Normale Supérieure, Abdelmalik Essaadi University, Martil, Morocco

Copyright © 2019 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: ICTs provide innovative means, not only for the dissemination of knowledge but also for the exploration of learning strategies that promote the construction of skills (Lebrun, 1999, CSE, 2000). Many professors who are beginning to be interested in ICT want to integrate them as tools to support their magisterial approach (Guay, 2002). Here, the professor takes advantage of ICT resources to significantly enrich his class presentations through multimedia presentations. Poellhuber and Boulanger (2001) speak of "interactive mastery". It is also about making documents available to students at all times, such as a website with links to EIDS. The present study was established with the aim of highlighting the utility of ICT in EEDD teaching at the core of the qualifying secondary school curriculum. The critical analysis of the curricular SVT curricula, and the statistical results allowed us to note that most teachers state that the use of ICT facilitates the construction of knowledge about EESD by students, and that the majority of them wish to benefit from continuous training to have a solid knowledge of Computer Science and to improve their practical ICT skills.

KEYWORDS: Environmental Education and Sustainable Development; ICTs; the formation continues; Secondary Qualifier; The common core.

PROBLEMATIC

To develop predispositions and ideas favorable to the preservation and sustainable management of the environment, the teacher must put learners face learning situations, which allow them to acquire the values of trends, concepts and appropriate environmental and sustainable development skills, with a focus on raising awareness, understanding and respect.

The present work aims to study the impact of ICT in the development of learners' knowledge about EESD. In fact, this impact may be important clues to develop innovative training modules for learners in the classroom. SVT of the SQ cycle based on the TICE.

1 THEORETICAL FRAMEWORK

1.1 ENVIRONMENTAL EDUCATION AND SUSTAINABLE DEVELOPMENT

Environmental education and sustainable development (abbreviated EEDD, sometimes also ESD for education for sustainable development), often associated with the notions of eco-citizenship, training and dissemination of scientific culture, is a pedagogical trend that root in ancient movements. It derives its name partly from the 1977 Tbilisi Conference (which launched the term "environmental education") and secondly from the 1987 Brundtland Report (which launched the expression "sustainable development"). The two appeared together in French from 1990 onwards. The 1977 Tbilisi Conference formalized environmental education at the international level by proposing the following definition: "It is a civic education with the purpose of" to bring individuals and communities to understand the complexity of the natural and man-made environment, complexity due to the interactivity of its biological, physical, social, economic and cultural aspects [...] to be acquired the

knowledge, values, behaviors and practical skills required to participate responsibly and effectively in prevention, environmental problem solving, and a management of the quality of the environment. "" (Final Report, Intergovernmental Conference on Environmental Education organized by Wnesco with the cooperation of UNEP Tbilisi (USSR) 14 - 26 October 1977). Sustainable development is defined as development that meets the needs of current generations without compromising the ability of future generations to meet their own needs (Brundtland Report, 1987). Sustainable development aims to achieve development that is often said to be based on "three pillars":

- Economically viable (meeting the needs of a generation);
- Socially equitable (solidarity between societies);
- Ecologically reproducible.

This concept leads to taking into account three perspectives:

- The spatial and temporal dimension;
- Scientific analysis;
- Citizenship.

According to the French Ministry of the Environment, Energy and the Sea: "Education for the environment and sustainable development brings together a variety of complementary actions ranging from awareness raising for all audiences to training in higher education or through continuing education. These different forms have in common a purpose of changing individual, collective and professional practices to accompany the transformation of society."¹

1.2 THE IMPACT OF ICT IN EESD

The profound changes in the international educational scene mean that the Moroccan education system seeks to integrate into the information and knowledge society, through the generalization of Information and Communication Technologies in education (TEC). Indeed, these tools represent an inexhaustible source of information and a means of easy access to knowledge, which can be used to develop the skills and knowledge of learners about EESD.

2 METHODOLOGY

To approach this problematic, we have drawn up an analysis of the Moroccan curricula of the core curriculum, subject Life and Earth Sciences, in order to draw a list of lessons that deal with the EEDD themes and to specify the main topics covered.

And a questionnaire has been distributed (see appendix) aimed at verifying the following hypotheses:

- Teachers master the computer tool?
- Do teachers think of the usefulness of ICT for developing learners' skills and knowledge about EESD?
- Are ICTs used to develop learners' skills in EEDD topics: Water, natural balances, climate, matter cycle, soil?

2.1 THE CRITICAL ANALYSIS OF EEDD IN THE PROGRAMS OF THE SVT OF THE COMMON CORE

The Moroccan school curricula of the Life and Earth Sciences of the qualifying secondary cycle contain units that deal with the subjects of environmental education and sustainable development. For the core curriculum, branch: Humanities and Social Sciences, according to the student's book "Al Manhal, Life and Earth Sciences, edition 4: 2013/1434" They are classified in the following table:

¹ <http://www.developpement-durable.gouv.fr/-Education-et-sensibilisation,593-.html>

Table 1. EEDD in the core curriculum, branch: Humanities and Social Sciences, according to the student book "Al Manhal, Life and Earth Sciences, edition 4: 2013/1434"

Semester 1	Unit 1 Water, source of life	Environmental Education and Sustainable Development	Lesson 1: Waste and Water Pollution. Chapter 1: The danger of waste and pollution of water. Chapter 2: Prospecting for groundwater.
			Lesson 2: The formation of water reserves. Chapter 1: The superficial reserves. Chapter 2: The underground reserves.
			Lesson 3: Drinking Water Chapter 1: Food supply of homes by drinking water. Chapter 2: The physical, chemical and biological constants that determine the quality of water and its possible uses. Chapter 3: Modern techniques of water treatment.
			Lesson 4: The water cycle
Semester 2	Unit 2 Man and the environment	Environmental Education and Sustainable Development	Lesson 1: Some aspects of natural imbalances Chapter 1: Air pollution and the destruction of the ozone layer. Chapter 2: The effect of greenhouses. Chapter 3: The consequences of excessive use of chemicals. Chapter 4: The consequences of forest destruction. Chapter 5: Causes and consequences of species extinction
			Lesson 2: Maintain Natural Balance Chapter 1: Clean Technologies: -The biological struggle. - The use of renewable energies. Chapter 2: The creation of ecological reserves.

It can be noted that for the core curriculum, branch: letters and human sciences, the main themes are: Water and natural balances.

For the program of the common core, branch: Sciences, according to the student's book "Al Moufid, Sciences of Life and Earth, edition: 2005", the lessons are classified in the following table:

Table 2. The EEDD in the program of the common core, branch: Sciences, according to the student's book "Al Moufid, Sciences of Life and Earth, edition: 2005"

Semester 1	Unit 1: Ecology		<p><u>Lesson 1: The School Outing</u> Chapter 1: Techniques of the school trip. Chapter 2: The realization of a school trip. Chapter 3: Define the "ecosystem".</p>
			<p><u>Lesson 2: Soil characteristics and their relationships with living things</u> Chapter 1: The characteristics of the soil. Chapter 2: The role of soil in the distribution of organisms. Chapter 3: The role of organisms in soil evolution. Chapter 4: The effect of man on the ground</p>
		Ecology	<p><u>Lesson 3: Climatic characteristics and their relationships with living things.</u> Chapter 1: Climatic characteristics. Chapter 2: The role of climate effects in the distribution of organisms. Chapter 3: The importance of knowledge and adaptation of climatic effects in the field of agriculture.</p>
			<p><u>Lesson 4: The cycle of matter and the flow of energy in an ecosystem.</u> Chapter 1: Food relations. Chapter 2: The food chains. Chapter 3: Pyramids of biomass and pyramids of energy. Chapter 4: Dynamic sides of the ecosystem;</p>
			<p><u>Lesson 5: Natural balances.</u> Chapter 1: The dangers of the irrational use of natural resources. Chapter 2: The need for the protection of natural balances and the role of man in the protection of nature.</p>

For the core curriculum, branch: Science, the main topics are: Soil, Climate, The cycle of matter and natural balances.

2.2 THE QUESTION SHEET

The questionnaire is distributed to 350 Moroccan teachers of secondary education SVT qualifying and 250 responses were obtained, the selected sample is part of different schools, rural and urban. This is a random choice and does not take into account the representativeness of the target population because our work is exploratory and does not aim to generalize the results.

3 RESULTS AND INTERPRETATION

We received the response of 115 teachers, which gives us a percentage of 46%, and the response of 135 teachers, with a percentage of 54%. (Figure 1)

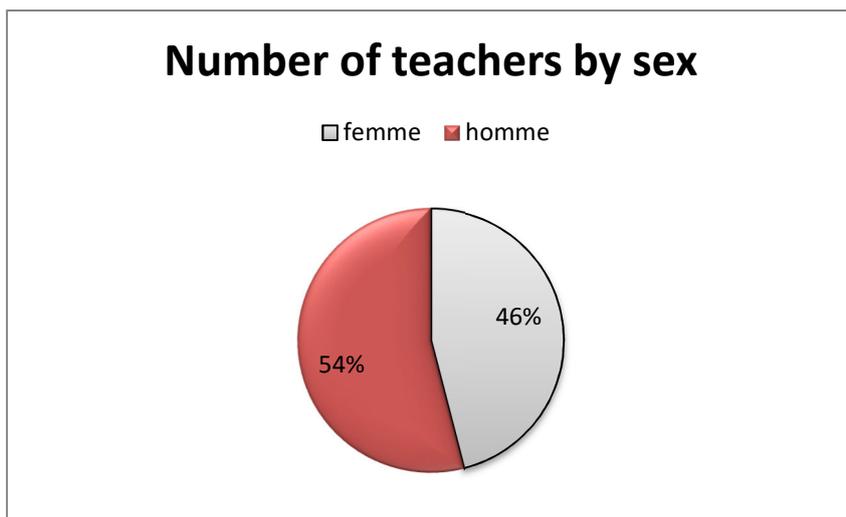


Fig. 1. Number of participants by sex

The seniority of the teachers participating in the study is: (Figure 2)

- 112 of the teachers participating in the study have a seniority of <5, which gives a percentage of 44.8%;
- 70 teachers participating in the study have seniority between:] 5-10], that is to say with a percentage of 28%.
- 38 teachers participating in the study have seniority between] 10-20], which gives the percentage 15.2%.
- 30 teachers participating in the study have a seniority > 20, with a percentage of 12%.

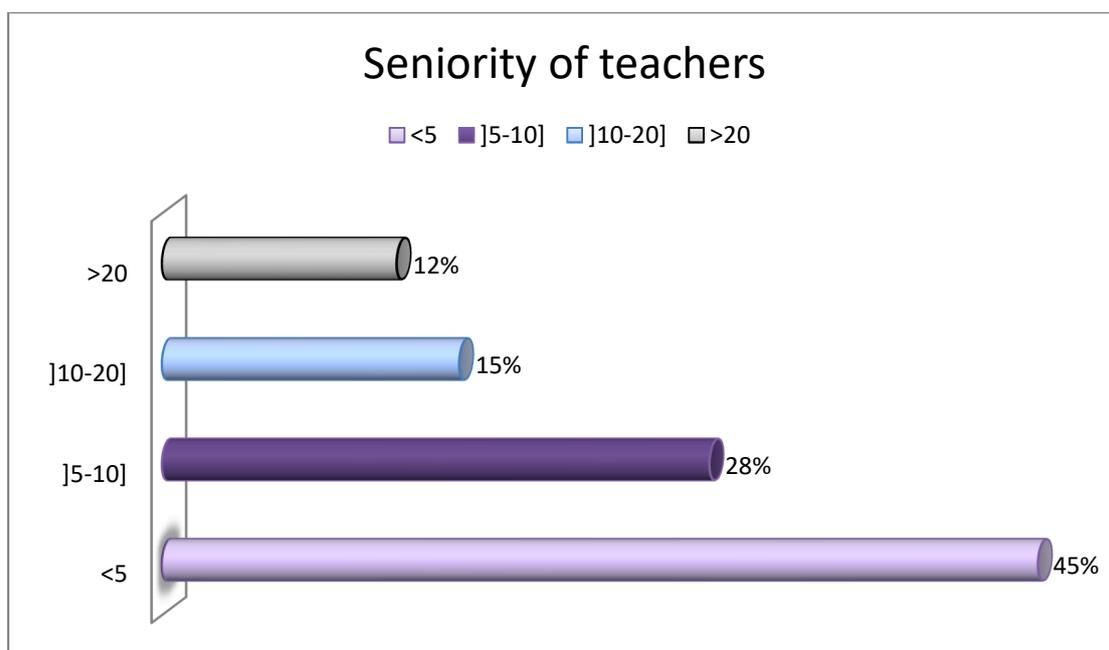


Fig. 2. Seniority of teachers

Computer skills: (Figure 3)

- 182 teachers participating in the study master the computer tool, which gives us a percentage of 72.8%.
- 68 teachers participating in the study do not master the computer tool, a percentage of 27.2%.

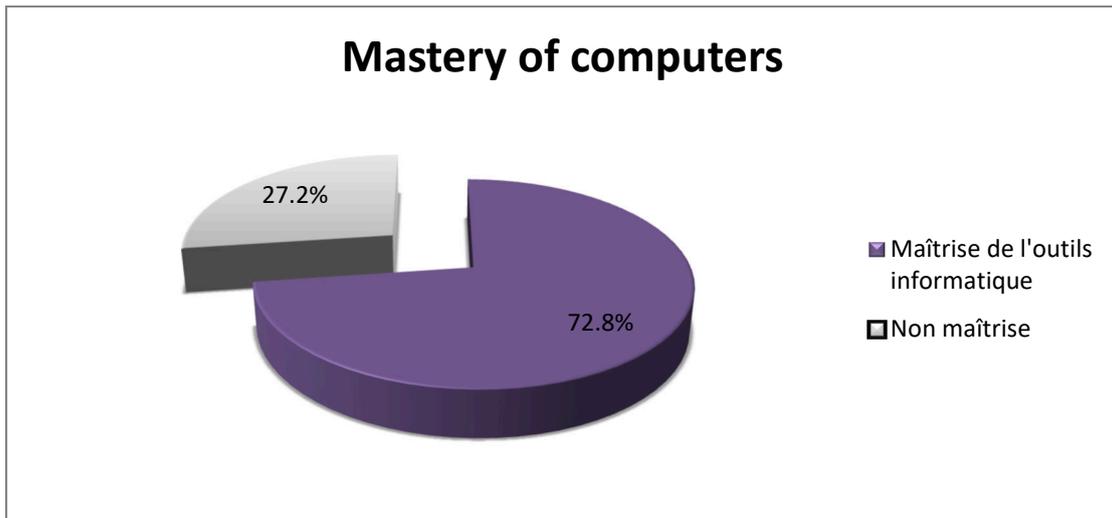


Fig. 3. Mastery of computers

Media preparation using ICT: (Figure 4)

- 50% of teachers prepare materials using ICT, 19% prepare them sometimes.
- 31% of teachers do not prepare the materials.

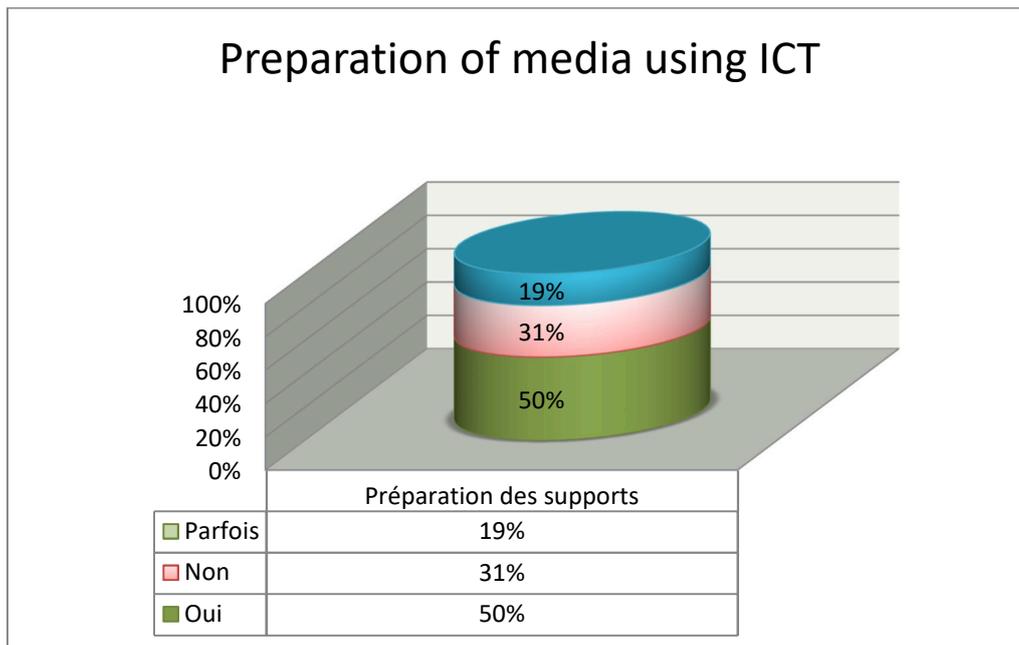


Fig. 4. Preparation of media using TICE

The usefulness of ICT in developing learners' knowledge about EESD: (Figure 5)

- 192 teachers participating in the study affirm the usefulness of the ICST, is a percentage of 76.8%.
- 58 teachers participating in the study contradict the usefulness of the ICST with a percentage of 23.2%.

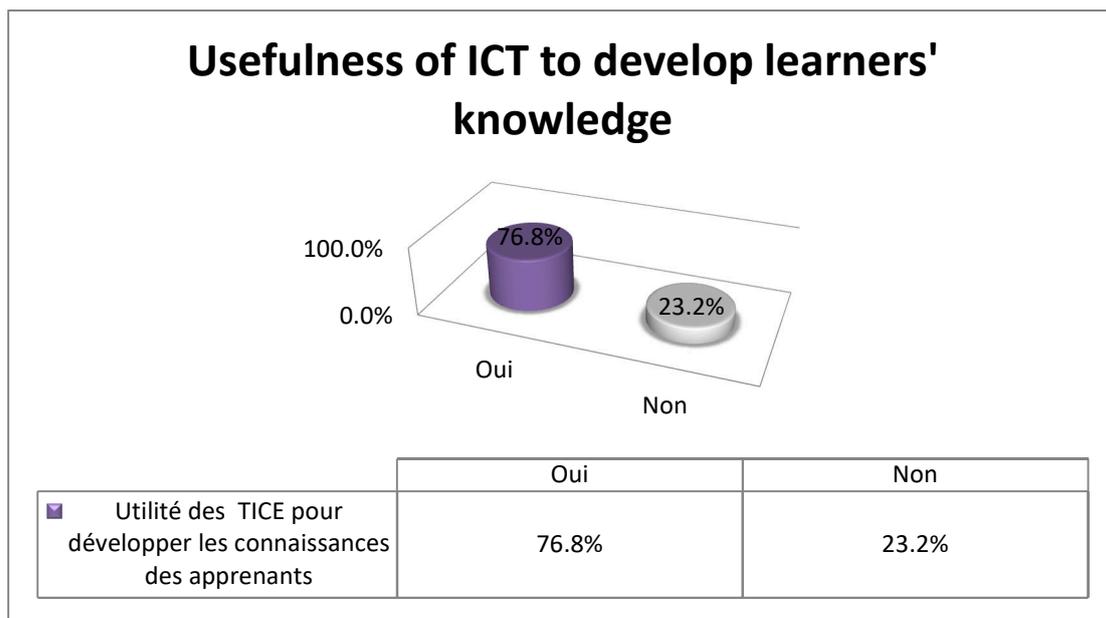


Fig. 5. Usefulness of ICT to develop learners' knowledge

4 DISCUSSION

According to the statistical results obtained through the questionnaire, it can be noted that most of the teachers who participated in the study are young people, since 73% of the teachers who have a seniority from > 5 years to 10 years. Of which 54% of them are men.

182 teachers participating in the study master the computer tool, which gives us a percentage of 72.8%, almost the percentage of young teachers (73%). This shows that the teachers participating in the study place great importance on the mastery and use of ICT.

50% of teachers prepare materials using ICT, 19% prepare them sometimes. This gives us a percentage of 69%, we can deduce that among the 72.8% teachers who master the computer tool, 69% who prepare media is permanently or non-permanent.

192 teachers participating in the study affirm the usefulness of ICT, a percentage of 76.8%, we can note that it is almost the percentage of teachers who master the computer tool.

5 CONCLUSION

According to our study, we can conclude that:

- The main themes presented in the core curriculum, branch: Humanities and Letters, are: Water and natural balances.
- For the core curriculum, branch: Science, the main topics are: Soil, Climate, The cycle of matter and natural balances.
- 73% of the teachers participating in the study are computer literate, 69% of who prepare materials using ICT in a permanent or non-permanent way.
- 76.8% of the teachers participating in the study affirm the usefulness of ICT for developing learners' skills and knowledge about EESD.

It can be concluded that: in order for ICTs to help teachers develop the skills, knowledge and knowledge of learner's vis-à-vis EESD, they need to benefit from ICT training.

REFERENCES

- [1] Brundtland report quoted by ESEMBERT, B. (1996) Sustainable development: a key for the 21st century in 12 Current issues on the environment, Ministry of the Environment, Publishing, Nice, p.132
- [2] Central Unit of Management Training, Morocco, (2012). Program of qualification of teachers of SVT of the qualifying secondary cycle.
- [3] GUAY, P. J., "The computer park college", Click, 44, 2002, p. 14- 16. [<http://clic.ntic.org/clic44/parc.html>]
- [4] LEBRUN, M., Technology for teaching and learning, Paris, De Boeck, 2nd edition, 2002. [<http://www.ipm.ucl.ac.be/marcell/livre1.htm>]
- [5] POELLHUBER, B. and R. BOULANGER, A constructivist model of ICT integration, PAREA Research Report, Trois-Rivières, Lafèche College, 2001, 204 p. [http://www.cdc.qc.ca/textes/modele_constructiviste_integration_tic.pdf]
- [6] <http://www.developpement-durable.gouv.fr/-Education-et-sensibilisation,593-.html>