Qualified intervention/qualifying formation: the socio-cultural animator in a science based society

Paulo Maurício[1,2], Ana Teodoro [1,2]

[1] Escola Superior de Educação de Lisboa- Instituto Politécnico de Lisboa (PORTUGAL)

[2] Centro Interdisciplinar de Estudos Educacionais (PORTUGAL)

paulom@eselx.ipl.pt, anat@eselx.ipl.pt

Abstract

An education promoting scientific literacy (SL) that prepares the citizens to a responsible citizenship has persisted as an argument across discussions on curricula design. The ubiquity of science and technology on contemporary societies and the ideological requirement of informed democratic participation led to the identification of relevant categories that drive curriculum reforms towards a humanistic approach of school science. The category 'Science as culture' acquires in the current work a major importance: it enlightens the meaning of scientific literacy.

Looking closely to the French term, *culture scientifique et tecnologique*, turns science simultaneously into a cultural object and product that can be both received and worked at different levels and within several approaches by the individuals and the communities.

On the other hand, nonformal and informal education spaces gain greater importance. Together with the formal school environment these spaces allow for an enrichment and diversification of learning experiences. Examples of nonformal spaces where animators can develop their work may be science museums or botanical gardens; television and internet can be regarded as informal education spaces. Due to the above mentioned impossibility of setting apart the individual or community-based experiences from Science and Technology (S&T), the work in nonformal and informal spaces sets an additional challenge to the preparation of socio-cultural animators. Socio-scientific issues take, at times, heavily relevance within the communities. Pollution, high tension lines, spreading of diseases, food contamination or natural resources conservation are among the socio-scientific issues that often call upon arguments and emotions.

In the context of qualifying programmes on socio-cultural animation (social education and community development) within European Higher Education Area (EHEA) the present study describes the Portuguese framework. The comparison of programmes within Portugal aims to contribute to the discussion on the curriculum design for a socio-cultural animator degree (1st cycle of Bologna process). In particular, this study intends to assess how the formation given complies with enabling animators to work, within multiple scenarios, with communities in situations of socio-scientific relevance. A set of themes, issues and both current and potential fields of action, not described or insufficiently described in literature, is identified and analysed in the perspective of a qualified intervention of animators. One of these examples is thoroughly discussed. Finally, suggestions are made about curriculum reforms in order, if possible, to strongly link the desired qualified intervention with a qualifying formation.

Keywords: scientific literacy, socio-cultural animation, curriculum design.

1 Introduction

"What must a responsible citizen know of science?" [1] was the question raised more than 4 decades ago by Don Price as a start to his paper on education for scientific age. Though this quest has not yet been settled and any responsible professional of any field should be accounted as a responsible citizen, the questions we address in this study are more specific. "Why must a socio-cultural animator know about science?" and "What must a responsible socio-cultural animator know of science?". In the present communication, the socio-cultural animator is identified with the worker – professional or voluntary – that is engaged in socio-cultural community development. Using the established expressions form the Portuguese, Spanish or French realities is the person conducting with and within the communities local activities referred as 'Animação Sociocultural', 'Animación Sociocultural' or 'Animation Social et Socioculturelle'.

Contemporary societies are scientific and technologically shaped. This can be perceived at a variety of levels. At a glance, we see that in our daily lives science based infrastructures that promote medical care, transports or energy or at least, network communications to your laptop are unavoidable; in your job, you are most certain to be confronted, even without realizing it, to science related issues and/or environments; democratic debates or community based problems are in many cases of scientific nature: higher incidence of leukaemia in some places, resources conservation, nuclear power plants locations or deposit of nuclear residues, alternatives to fossil energies, water and air quality, ethical questions emerging in the biology/medicine research boundary; more and more issues of international relevance lye in the scope of health and science topics: recent world spreading of H1N1 flu, increasingly situations of pathogen dissemination through food, natural species extinction. Additionally, in some countries, e.g. the USA, people are called to vote proposals regarding the permission to perform or to fund certain science related projects and endeavours[1].

Even in the face of all these situations defying a responsible citizen, we agree with Milan Kundera, when writing about the German author and scientist Goethe: “In contrast, Goethe lived during that brief span of history when the level of technology already gave life a certain measure of comfort but when an educated person could still understand all the devices he used” [2].

Surely, in the present, it is impossible for an educated person to understand all the science concepts beneath the devices used. Nevertheless, in view of promoting an informed citizenship it is no longer acceptable that education, taking place in formal or non-formal settings, dismisses science as a matter to specialists. We can hardly argue that a citizen can not take an informed position due to the complexity of socio-scientific issues that are present in the public debate.

In fact, issues like high voltage power lines near people's home, nuclear power plants safety or resources exhaustion are complex, but if we know something on science processes and contents we would be able to take side, and, above all, to participate and/or promote the debate: There is no debate without informed citizens, and the democracy becomes weaker.

One of the major driving forces in curriculum design to enhance scientific literacy (SL) is a “science for all” context reinforcing the Science, Technology & Society (STS) connections [3]. Although SL is a non-consensual concept [3, 4, 5] or, as DeBoer wrote, a “general concept that has had, and continues to have, a wide variety of meanings” [4], it bears the advantage of bringing science education to meet specific outcomes contextualized by local considerations, understanding local as country, district, school or communities. After all, as DeBoer states

> Ultimately what we want is a public that finds science interesting and important, who can apply science to their own lives, and who can take part in the conversations regarding science that take place in society. (...) feeling that one can continue to learn and participate are key elements to life in a democratic society. [4]

In this process, while some will proceed his science studies others “will provide leadership in their communities regarding science-based social issues” [4]. To us, this leadership is considered as one of the levels of socio-cultural animators’ possible action. Between those that attain a scientific literacy level of informed and responsible citizenship and those that become experts a continuum of levels can be found. But as a consequence of the socio-cultural animator potential work in leading a community this particular citizen is compelled to an intermediate level of SL that must be more advanced than the level attained by the common citizen.

Moreover, in a time when qualified formation of socio-cultural animators is pursued through higher education programmes, it becomes the responsibility of higher schools to promote the SL of the socio-cultural animators.

---

[1] As an example we can refer the article XXXV of California Constitution that was submitted to the voters as proposition 71 in the general election ballot on November 2nd, 2004, and referred to stem cells research and funding.

In the present communication we will try to establish and justify the need for a proper scientific formation of socio-cultural animators. We sustain that the category of relevance in the science education literature, science-as-culture, is the most suitable to an education fostering scientific literacy. We proceed by accounting on the proliferation of educational settings and the role of socio-cultural animators in non-formal and informal spaces of education. We then discuss how these spaces, when in connection with the communities, can contribute to improve the meaningfulness of science for learners. Examples comprise one non-formal and other informal education settings for which the socio-cultural animators' action can be expected.

We address the formation of socio-cultural animators in the European Higher Education Area (EHEA), with emphasis in Portugal, and contend the formation received with the intervention outlined in out-of-school science learning settings.

2 Science as culture

In French we find what seems to us a more precise and useful meaning of SL as *culture scientifique et technologique.* Science-as-Culture, a concept of relevance for science education, was formulated in research linked to the "enculturation of students into everyday society" [6]. In this approach it is identified a "network of communities in student's everyday lives: health systems, political systems, the media, environmental groups, and industry", and since each community interacts with communities of science professionals, we achieve a "cultural commonsense notion of science" [6]. Moreover, we can add that science *is* culture. In its contents, in its processes, in its history and in its infrastructures, science, like music or dance or theatre has its stages (laboratory, school, museums), its actors (scientists in a research group for instance), its script (a research programme), its methods (according to the research) and its audiences (other scientists and the citizens).

Therefore, we believe that the category of relevance Science-as-culture is, among the studied categories of relevance, the most suitable approach to claim for science education for all. This allows us to demand a curricular design for educating professionals to work with and within communities, such as socio-educational workers or socio-cultural animators (as they are known in Portugal, Spain, Brazil and some other countries) that enables them to face up emergent socio-scientific issues.

In José António Marina [7] we find a beautiful description of the "purpose" of science. This, the science, "proposes to clarify things, and clarify it means letting notice its beautiful luminosity". In addition

> The astronomer should not sing the glories of creation, rather seek the laws governing the turning of the heavenly bodies, but it wouldn't be too much that, while he's formulating the laws, he shares with us the exaltation brought upon him by the knowledge of the accurate, clear and precise music of the celestial spheres. [7]

On an additional perspective, we can understand culture as an identity marker of communities, even in the most abridging sense. For Europe, in this perspective, science, and particularly modern science that emerged from the Renaissance, is undoubtedly one of the identity markers. Science plays a major role in the European cultural matrix. Tycho Brahe, Galieo Galilei, Isaac Newton, Marie Curie and Albert Einstein are both part of the European cultural inheritance and outstanding figures in the world's culture.

Recent European projects, such as the two years programme ESCITY - "Europe Science and the City: Promoting Science Culture at Local Level" [8] (financed under the European Commission 6th Framework Programme) or the European Science Foundation (ESF) Project "Inventing Europe – Technology and the Making of Europe - 1850 to the Present" [9] that released its final report in March 2011, are among the projects that work on science & technology both fully integrated in culture and generating culture.

In the ESCITY project the promotion of science culture is understood as a cultural promotion "aimed at enhancing people's resources to understand the world they live in and, by doing so, improving their ability to make choices and participate in an active manner in the management of their communities and society as a whole" [8]. On the Inventing Europe project, the lens to study European integration is Technology, thought as comprising "machines, products, systems, and infrastructures as well as skills, knowledge, and cultural scripts that make them work. Hence, technological change is understood as a deeply political, social, and cultural process involving people, institutions and choices" [9].

In the context of these projects, the overarching concept of culture integrates Science & Technology in such a way that leads us to defend that a literate individual is the one that knows himself and knows the world in which he lives, in order to be able to act on himself and over the world. For this action to occur the individual must be familiarized, to some extent, with science concepts, ideas and methods.

3 Spaces of education – sPACes of action

Education for long time has evolved in school. In fact it was born with school [10]. For some decades now other spaces have emerged as educational stages. As Rennie [11] pointed out, "learning rarely if ever occurs and develops from a single experience". With the emergence of the "third generation" of science museums conveying an explicit educational purpose and exhibits built to display ideas instead of exhibits based around objects - which characterized the precedent generation of museums, science centres, botanical gardens, aquaria, planetaria, zoos, environment interpretative centres among others - we are in the presence of a proliferation of non-formal science education centres [12, 11]. These are characterized by being out-of-school educational environments without a formal curriculum.

Several authors add another stage of learning, the informal one. This informal science learning is the one that we can get from everyday experiences.

At the recent 6th Science Centre World Congress held in South Africa, in September 2011, was released the Cape Town Declaration. In it we acknowledge the existence of 2500 science centres in 90 countries and administrative regions, which conforms to the number of approximately 3000 presented by Persson [13]. The declaration also emphasizes the huge amount of 310 million people participating each year both in the in-house and outreach activities. This number must be confronted with the 158 million people in 2001, as presented by the Association of Science-Technology Centers (ASTC), with the caution that the sampling has almost certainty some differences. To account for the above mentioned proliferation of science centres we can compare the 445 members of ASTC in 2001, to the 532 members in the end of 2004 and the 600 members in 2010 [14, 11, 15]. Between 1990 and 1996, had opened 86 new science centres, more than in the entire previous decade, and in average we have a 30% growth in the new science centres each year [14].

From now on we will adopt the terminology used by Rennie [11] in which the word museum includes all the above mentioned non-formal stages. This is in accordance with the very definition of a museum by the Statutes of the International Council of Museums [16].

For a long time the literature on socio-cultural animation [17, 18, 19] claimed for the link between educational process in non-formal settings and the socio-cultural animation (SCA). As we can see in Bernet, this connection is conceptualized for more than twenty years [17].

3.1 Science education in context

School science curricula become mandatory in the XX century for most countries in the world. Nevertheless, the success in learning science has not always been achieved.

Although some important measures have been adopted with the aim of improving learning, science education is still confronted with several problems. One of the measures refers to the evaluation of results attained by learners: the OECD[2] Programme for International Student Assessment (PISA) assesses, in a three years base and in an equal footing, the competencies in science literacy (as defined by PISA), in reading literacy and in mathematical literacy of 15-year-old students. Problems in science education continue for at least since the post-Sputnik reforms in the USA, being the overarching one the fact that science has become less and less interesting to the youth [20]. A lack of

[2] The Organisation for Economic Cooperation and Development (OECD) comprises 32 industrialised nations. PISA involves more countries than the OECD countries. In 2006 57 countries participated in PISA.

relevance for learners in the school science is one of the major problems identified in the literature [21].

The literature on science learning in context, that is, in a relevant learning environment, has stressed the importance of multiple settings and free-choice opportunities for the learners [22, 23]. However, unlike Roth and Boyer [22] we think school can provide relevance to science learning. The problem is well identified in Fusco [21]: it is not *what* students learn but *how* they learn that is relevant. The exact same critics that are addressed to school science can be redirected to some science centres learning activities. In fact we can say, following some critics outlined in Rennie [11], that some activities in science centres are almost only entertainment with science toys or, worst, are presented as magical activities.

So in this communication, by stressing the importance of science centres in creating a relevant learning environment, we do not dismiss the fundamental role of science school. By the contrary, we recognise its role namely in, for instance, educating socio-cultural animators able to plan and implement relevant science learning activities in science centres, museums, or even community significant environments .

With this cautionary tale we advance two examples of out-of-school science learning environments that have the capability of creating relevance, and for which the intervention of socio-cultural animators can be justified.

In non-formal settings, and namely in most science centres, learners can find that relevance. Let us take as an example the fluviarium – freshwater aquarium – existing in Mora, a Portuguese village located in the inner country, on upper Alentejo by the river Raia. In Mora's fluviarium, youth relates the sport fishing, that eventually practices with the family in that region of Alentejo with the habitats of fishes and, if properly driven can learn on water temperature and from temperature to thermometer as an instrument and eventually became aware of the importance of the definition of a scale.

The fluviarium has an explicit educational goal, as all science centres, and we can expect that a real science experience could be achieved if the visit or the outreach activity is properly conducted. Eventually, this is the task of the socio-cultural animator working in the science centre.

In other project carried out in Canada, the eelgrass mapping project that covers over 500 km of coastline in British Columbia [22] involving twenty volunteer groups, the educational experience emerged of the volunteer's free individual choice to interact with their peers in all the actions of the project.

The relevance to coastal communities is evident from the fact that “eighty percent of commercially valuable fish spend part of their life cycle in eelgrass beds.”[22] and, moreover, eelgrass, a “flowering saltwater plant that provides habitat for fish and invertebrates as well as foraging areas for birds” are present in the everyday lives of coastal communities. The project described in Boyer and Roth [22] is significant on the possibilities that an out-of-school project offers to a science literacy long term project.

In a description of the typical kinds of interactions that unfolded throughout the day, Boyer and Roth [22] found a very rich process with “people of different ages engage in different actions and participate in different ways. The setting is materially rich with eelgrass, moving transects, passers-by, a field guide, golden eggs, and a rising tide.” [22]. The socio-cultural animator may be the one that promotes this type of people interactions.

4 Formation of a socio-cultural animator in PORTUGAL

Currently the formation programmes at higher education level in countries that have signed the Bologna Declaration can no longer be viewed solely in a local perspective. One of the major goals of the Declaration was the setting of a European Higher Education Area in which the systems of higher education across Europe would be more comparable, compatible and coherent. In March 2010 the EHEA was officially launched.

The revision of the types of occupation by the United Nations led to changes in the definition of some professions and occupations also at a country level. In Portugal, the adoption of the International Standard Classification of Occupations 2008 led to changes in the formation and professionalization of socio-cultural animators [24]. The recognition of a certain number of required competences for being engaged in socio-cultural community development activities has shifted the formation to a higher education level. Therefore, in Portugal, the tendency started in the 1990s to offer high level formation in sociocultural animation has broaden up [18], eventually replacing the existing intermediate level formation.

Simultaneously, the signature of Bologna Declaration in 1999 constituted in Portugal a stimulus to alter existing curricula and to create new curricula of high level socio-cultural animators' formation. This latest is indeed the situation of Escola Superior de Educação de Lisboa that started in 2006-07 to offer a 1st cycle of studies in SCA.

Currently there are in Portugal 10 programmes of formation of socio-cultural animators, provided by seven higher education institutions. All the programmes fall in the category of polytechnic education, and correspond to a 1st cycle of studies with an academic formation of 180 ECTS (European Credit Transfer and Accumulation System). There are also, offered by different institutions, some other programmes whose objectives and prospective areas of intervention overlap, at least partially, those referred to socio-cultural animation, namely programmes in cultural animation (3 programmes).

In general, the objectives of the formation programmes include some common ideas: the socio-cultural animators should become able to plan, implement and evaluate projects under the scope of SCA, meaning interventions in all cultural fields with and within the communities; the socio-cultural animators can be engaged in education of adults and other educational activities.

5 Assessing the formation in view of the action

5.1 Discussion of a possibility of intervention

The stages in which socio-cultural animators could develop their work - provided a qualifying formation, as we have shown in section 3 - have met a substantial diversification and growth. In projects aiming for community development science can not be neglected as a framework able both to provide broad community engagement and learning and/or developing opportunities.

In fact, the overarching problem in science learning referred above of science interest decreasing as a result, among other factors, of the lack of relevance, can be overcome by letting the participants create their meanings by addressing their concerns, interest and experiences within a community project. The goal of acting within a community by itself resembles the very function of the socio-cultural animator.

The nine month project outlined by Fusco [21] involving an after-school project directed to adolescents of a community of long-term homeless shelter in New York City of about 200 families, was a success both as viewed by the science outcomes defined in the *Standards* as by the participanting youth and the community itself.

In their community they had a lot of unknown dimensions "filled of garbage, drug needles, and other debris" [21] surrounded by a virtually destroyed and unsafe wire fence.

Discussing the issues that concern them like "teen pregnancy, AIDS, gangs, drug and alcohol abuse and violence" [21], the goal of transforming that lot in a useful space emerged. Interesting enough is that strategies to measure the dimensions of the lot begun without measuring instruments. One of the boys counted his footsteps, other counted the number of concrete blocks in the pavement from one extremity of the fence to the other. The very principle of measure was put forward.

In the next step, divided in groups they recorded all types of contents that were in the space using several instruments like writing records, photographs or drawings. In the process they exchanged information and at the end the objective of transforming the space into a community garden (flowers beds were among the findings, and someone remembered that the space was once a garden) was assumed by everyone, but not without first considering the risks and benefits to the community.

Designing the garden in a way that it become accessible to wheelchairs, prevent garbage to end in the floor, charting the sunlight direction throughout the day and the seasons to decide where the seeds should be planted, getting technical assistance to test the nutrients of the soil – all of these steps are some of the evidences that formal school in the *Standards* was translated in this process.

In Fusco [21] we can find how the *Standards* are met with this project. On the other hand, the relevance to science learning was not to be found in the content but in how the learning was achieved.

Is a socio-cultural animator able to explore the science that emerges in this activity?

5.2 Towards a qualifying formation

The comparison of the Portuguese socio-cultural animator's programmes of formation allows us to make some remarks. All the programmes distribute the 180 ECTS of formation approximately evenly through 6 semesters; the percentage of mandatory credits directly under the scope of natural and exact sciences varies across the programmes, but never exceeds 4,5% of the total credits; in some programmes there are optional courses related to science that can increase the proportion to at the most 8,3% of the total credits. Looking upon the cultural animation programmes the situation becomes more stressful: some of them have no credit of formation whatsoever related to science; one programme, in contrast, has currently courses that sum up to circa 28% of total formation (in past moments this percentage could reach the 49% with a certain choice of courses).

It can be stated that providing a formation in science for the socio-cultural animators does not seem to be a major concern in designing these curricula on the Portuguese higher education area. However, as we sustained in the above sections, socio-cultural animators must have a qualifying formation in order to be able to do a qualified intervention.

6 Final remarks

In this communication we have identified the category of relevance science-as-culture as suitable to claim for a curricular change in the socio-cultural animators' high level formation. We have outlined important changes in the society for some decades ago, namely with the emergence of non-formal and informal stages of education. On the other hand, we stressed the permanence of important problems in science education such as the lack of relevance for students found in science school in part due to the dissociation of school from communities.

To promote the success of science education to all and each student, none opportunity to learn can be underestimated, and eventually wasted. In this communication we address the necessity of taking the full advantage of the connection of socio-cultural animators with the communities.

Due to the increasing number of non-formal and informal science settings, a rich space of action offered to socio-cultural animators, when carry on their working on community development, are these spaces. The opportunities for a meaningful science learning environment, offered to the people in the community when in contact with science activities, can only be fulfilled if the socio-cultural animator is aware of those opportunities.

As we saw above, only a small fraction of the formation credits in the 1st cycle of studies curriculum of a socio-cultural animator is science related. This fact plus the one resulting from a prevailing weak secondary school formation in science, leads to the consequence that most of the opportunities of meaningful science learning will be lost.

Additionally, we agree with Caride Gomez, in assessing the SCA interventions:

> The risks that socio-cultural animation succumbs to the power exerted by the markets, and their insatiable wishes for consumption, may derive from its accommodation or its intertwining to some entertainment or playful-creative recreation practices, and lead to depriving culture from its most solid grounds, replacing its praxis by a liquid and frivolous version, careless of what it stands for as an exponent of the Humanity history, not only as reservoir of the past, but mostly as a foundation for what its future should be. [25]

The action of the socio-cultural animators in science related activities, in whatever settings it occurs, can not be reduced to a playful, entertaining or magical activity.

The set of arguments presented allows us to claim for a science education in the socio-cultural animator higher level formation that enables him to seize the opportunities offered in their contact with out-of-school science. We claim for a qualifying scientific formation in view of a qualified socio-cultural animators' intervention.

REFERENCES

[1] Price, D. K. (1968). Educating for the scientific age. *Bulletin of the Atomic Scientists*, Oct., 26-32.

[2] Kundera, M. (1991). *Immortality*. New York: Grove Press Inc.

[3] Chagas, I. (1999). Literacia Cientifica. O Grande Desafio para a Escola. Comunicação ao I Encontro Nacional de Investigação e Formação, Globalização e Desenvolvimento Profissional do Professor. ESELx.

[4] DeBoer, G.E.(2000). An historical look at scientific literacy. *Journal of research in science teaching*, 6(37), pp.582-601

[5] Roberts, D.A. (2007), Scientific Literacy/Science Literacy. In S.K. Abell & Lederman (Eds.) *Handbook of Research in Science Educatio*n (729-780). NY: Routledge.

[6] Aikenhead, G. S. (2007). Humanistic perspectives in the science curriculum. In S.K. Abell & Lederman (Eds.) *Handbook of Research in Science Educatio*n (881-910). NY: Routledge.

[7] Marina, J. A. (1995). *Teoria da inteligência criadora.* Lisboa: Caminho

[8] ESCITY (2008) Action guide. Retrieved from http://www.escity.org/

[9] ESF (2011). Inventing Europe. Final report. Retrieved from http://www.esf.org/index.php?id=386

[10] Pombo, O. (2006).*Unidade da Ciência. Programas, Figuras e Metáforas*. Lisboa: Editora Duarte Reis.

[11] Rennie, L.J. (2007). Learning science outside of school. In S.K. Abell & Lederman (Eds.)

*Handbook of Research in Science Educatio*n (125-167). NY: Routledge.

[12] Chagas, I. (1993). Aprendizagem não formal/formal das ciências: Relações entre museus de ciência e escolas. *Revista de Educação*, 3 (1), 51-59. Lisboa.

[13] Persson, P. (2010). Science centres – a global movement. *European network of science centres and museums newsletter.* 83, 1

[14] ASTC (2010). *2010 Science center and museum statistics*. Retrieved from www.astc.org

[15] Fors, V. (2006). The missing link in learning in science centers. (Doctoral dissertation). Retrieved from hh.diva-portal.org/. (diva2:318952)

[16] ICOM (2007), International Council of Museums Statutes http://icom.museum/who-we-are/the-organisation/icom-statutes.html

[17] Bernet, J. T (1988) Animación sociocultural, educación y educación non formal. *Educar,* 13 17-41

[18] Lopes, M. S. (2008). *Animação sociocultural em Portugal.* (2nd ed.). Amarante: Intervenção.

[20] Nuffield Foundation. (2008). *Science education in Europe: Critical Reflections*. UK: Osborne, J, & Dillon, J.

[19] Sousa, J. C. (2011). Formação em animação sociocultural: Contributos de projectos de investigação e intervenção em animação socioeducativa. *Nuances:Estudos sobre a Educação*, 19 (18), pp 52-67.

[21] Fusco, D. (2001). Creating relevant science through urban planning and gardening. *Journal of research in science teaching*, 8(**38**), 860-877

[22] Boyer, L. & Roth, W.-M. (2006). Learning and teaching as emergent features of informal settings: An ethnographic study in an environmental action group. *Science Education*, 1028-1049. DOI: 10.1002/sce

[23] Hogan, K. (2002). A sociocultural analysis of school and community settings as sites for developing environment practicioners. *Environment Education Research,* 4(**8**), 413-437

[24] Campos, J. (2011). Profissionalização da ASC: (novos) Elementos contribuintes para o reconhecimento e definição da profissão ao nível nacional e internacional. In J.D.L. Pereira & M. S. Lopes (Eds.) *As fronteiras da animação sociocultural. (*pp. 313-327). Amarante: Intervenção

[25] Gomez, J.C. (2011). As identidades da animação sociocultural nas fronteiras da sociedade globalizada.In J.D.L. Pereira & M. S. Lopes (Eds.) *As fronteiras da animação sociocultural. (*pp. 17-32). Amarante: Intervenção.