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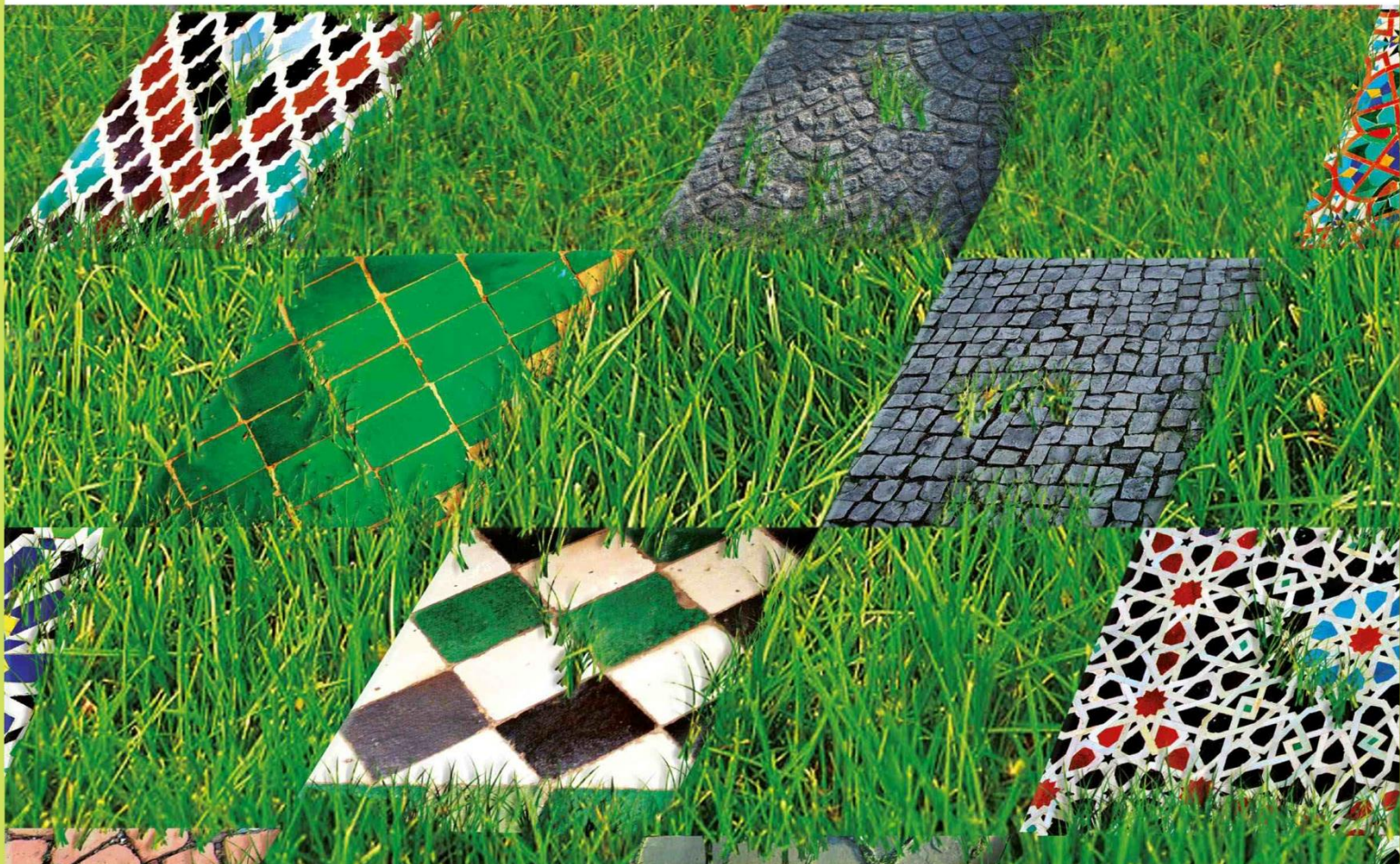


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Niche 8 Creative impulses



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Niche 8

Creative impulses

Les impulsions créatives

Impulsos creativos

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Arts as a Methodological Tool in Environmental Risk Areas

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patricia carla Souza - UFRJ
Carlos Frederico Loureiro

Let's play transforming!

Workshop

Maria Heras Lopez - Universitat Autònoma de Barcelona (UAB)
J. David Tàbara

LA BELLE POUBELLE

Workshop

Ahmed ZOUBID - Retraité

FeedTheChange!

Workshop

Jose Marcos-Iga - North American Association for Environmental Education / Environmental Education Exchange

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Poster presentation

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El dibujo, la pintura y las manualidades con materiales desechables

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Ana Olga Gonzalez - Colegio Universitario de San Juan

Kinyivi

Poster presentation

Mónica Rodríguez - IDENNA- LARA
Gloriant E. Salas C.

A consultative process with children for designing a community education park about positive climate change awareness and action

Poster presentation

Susan Wake - Unitec Institute of Technology
Lucia Cha

Dancing and performing for environmental education in mangrove areas

Poster presentation

Rebelo Mochel Flavia - Dept Oceanografia e Limnologia Universidade Federal do Maranhão
Priscilla Coelho Ribeiro, Jacyara Nascimento Correa, Jessica Gomes Pinheiro, Jainara S. Miranda Reis

Picture Story Books by Children for Children

Round table papers

Jeanie Clark -

La Fotografía en espacios urbanos

Round table papers

Lambertys Belisario - Universidad Bolivariana de Venezuela

Sustainability and consumption

Round table papers

Leandro Guimaraes -

Jorge Alexandre Nogared Cardoso

Environmental Art for Transformation

Oral papers

Megan Marks - University of the Sunshine Coast PhD Student

Fostering creativity in learning about sustainability through engagement in constructionist activities

Oral papers

Maria Daskolia - University of Athens

Chronis Kynigos

La apreciación estética de la naturaleza

Oral papers

Dalva Maria Bonotto - Instituto de Biociências UNESP campus de Rio Claro

Una mirada ambiental desde la fotografía

Oral papers

Alma Lilia Cuevas - Estado de México

Armando Meixueiro

Waterbooks for learning and engagement

Oral papers

Jade Herriman - Institute for Sustainable Futures, UTS

Annie Bolitho

The untiring Nature

Oral papers

Carlos Junior Gontijo Rosa - Universidade de São Paulo

Valdir Lamim-Guedes

PROTEGEONS LA FORÊT POUR LA VIE

Oral papers

LAURENT NSENGA NDJIKE KELEMA - Association des Ingénieurs Agronomes du Congo

EKUWO MUKUNDJI LUCIE

El papel del arte en la construcción de un nuevo paradigma ambiental y la mejora del entorno urbano y rural

Oral papers

Maria Novo - UNED-----

The sustainable fish performance

Oral papers

Elena Pagliarino - Italian National Research Council

Francesca Guglielmino, Silvia Elena Montagnini, Roberto Nigrone





Un dadaïsme au service de l'environnement

Oral papers

Najoua LOUDYI - Architecte

Dalila LOUDYI

Linking Urban Migrants to Wilderness Parks

Oral papers

Peter Vogels - Grant Macewan University

Elizabeth Lange

ECO-MAFIA FICTION

Oral papers

Alessandro Perissinotto - Université de Turin - Dipartimento di Filosofia e Educazione

Sound: exchange, analysis and emotions

Oral papers

Daniela Lenti Boero - University of Valle d'Aosta

Ethics stimulating Aesthetics: environmental considerations stimulating artistic imagination

Oral papers

Barbara Jekot - University of Pretoria

Director, ArtMill Center for Sustainable Creativity

NGO Forum

Barbara Benish - United Nations Safe Planet Campaign

Naturebook

NGO Forum

Nancy Gladstone - Siren Conservation Education

Sasha Norris

Creative impulses

Synthèse des travaux de la niche 8 revu et enrichi par Yolanda Ziaka

The environmental crisis is a crisis of civilization, both in terms of the breakdown of the relationships between humanity and nature, and also at the level of reports between city and rural areas. This is the conclusion of the vast majority of speakers at the "Creative Impulse" theme Niche 8, at the 7th WEEC. How to restore the harmony between humankind and nature, between the city and the countryside? How to break the dichotomy between reason and emotion, to arrive to a holistic approach of the human person, a person capable to meet the challenges of our time, to take responsibility, to reflect and act?

Art is a universal language that helps communicate and raise awareness. It allows us to build a relationship, not only rational but also an emotional one, with our environment and thus, helps to form citizens who have the skills and the desire to act. This is the argument put forward by the participants of this thematic. Artistic activities evoke thoughts, emotions, but constitute also a source of pleasure. They involve the body (the senses), the mind (thinking), and the heart (emotions and relationships with the others). They can therefore be a powerful tool to address the human person in its entirety.

An artistic approach would thus :

- Incorporate the dimensions of emotion, imagination and creativity in the activities of the Education for the Environment and the Sustainable Development, taking into account the poetic and symbolic dimensions of the environment;
- Help to understand the complexity of the environmental challenges and to advance the practice of interdisciplinarity, through the encounter between art and science, as two complementary forms of knowledge to the understanding of the physical and social environment;
- Establish links between communities with high socio - cultural diversity, facilitate the integration and synergy needed, in the same territory as well as between rural and urban areas;
- Create the conditions for creativity to flourish, creativity which is innate to every human person, as an important and necessary means of communicating and establishing relationships with others.





Artistic expression activates a wide range of languages (images, sounds, gestures, verbal and physical communication). Speakers in this thematic of the 7th WEEC presented educational activities that used a variety of artistic forms, examples of activities that can be organized in the classroom or on the field, both in urban and in rural areas:

- Experiences and tools for sensory exploration of the natural environment in the classroom and in the field, in town and in the countryside;
- Activities using the theater and the photography, as a means to popularize scientific concepts related to environmental issues, activities where learners are involved either as actors or as spectators;
- Diverse experiences of environmental communication based on an artistic approach: communication of students to other students, to the surrounding social community, to the general public;
- Outreach on environmental art in the street, in public places, under conditions that allow a dialogue with the artist / author;
- Educational tools such as educational games, board games and computer games, to help the perception of environmental facts and to foster creativity.

The interventions of educators from all over the world in the theme of “Creative Impulses” at the 7th WEEC, present a variety of original experiences based on the creativity and the enthusiasm of teachers and learners, and on the principles of active learning and social action. These experiences represent a valuable source of inspiration for any environmental educator. However, as noted by the participants, it is important to remember the words by the great Brazilian philosopher and educator, Paulo Freire: “Education does not change the world, education changes people who will change the world .”

Sustainable Creativity: Civil Society, Sustainable Development, and Transformative Education for the 21st Century

Barbara L. Benish

ArtMill Center for Sustainable Creativity (Director)

United Nations Safe Planet Campaign (Advisor)

Since 2005, ArtDialogue is one of many small organizations leading the global trend towards sustainable, environmental education facilities and programs. Programming that actually brings youth out of the cities and classrooms to better understand what needs to be done to protect our planet for the next generation. As part of our mission to bring the pressing environmental issues of our times to the public at large, our ArtMill site in the Czech Republic integrates sustainable practices into the regular summer programs on a daily basis, as well as education for sustainable development for all our shared futures.

Curriculum is specialized for both upper level university programs and for youth. Students learn not just by reading about global water issues, but also by conserving our well water with short showers and low flushes, or watching how a turbine pumps water from the 16-hectare lake to create electricity and calculating exactly how and how much the water level drops.

These are physical manifestations of sustainable practices.

To truly comprehend environmental problems of our planet, the student must be in that environment, or nature. The Latin root of the word, "sustinere" combines the prefix "sub" (below) with "tenere" (to hold). Thus the knowledge comes from the earth, from below, and is "held"/comprehended, in a more integrated way. We now understand that this experiential learning brings both better comprehension, and retention of information, but also is more enjoyable for the student. It is the "Pragademics" of instilling more praxis than theory to learning, what the Wangari Maathai Inst. For Peace and Environmental Studies calls "learning for being as opposed to learning for knowing". (Maathai, Wanjira. 2013)

Combined with a critical aesthetic, creative design-integrating process, what we call Sustainable Creativity is a two-fold experience at ArtMill. Most educators agree that fostering the imagination, and enabling "the ability to transcend traditional ideas, rules,





patterns, relationships, or the like, and to create meaningful new ideas, forms, methods, interpretations, etc.” leads to the originality, progressiveness, and we would emphasize, intellectual and emotional transformation of the student to address social and environmental challenges of the future. (Benish, Barbara. 2013)

Sustainable Education should be intrinsic to any education today. So while we teach Green Design, Plastic Pollution Awareness and Policy, Solutions and Study of Fish Farming, Rivers-to-Oceans, Hydro-Electric Energy Solutions, Social/Environmental Justice, Hazardous Chemicals and Waste, Civil Society in Post-Totalitarian Countries, we also practice what we learn outside of the traditional classroom.

The experience is enhanced and integrated with the context of the space: a beautiful, secluded 17th century lake-side mill surrounded by forests, small farms, and the silence that surrounds a very recent totalitarian political past. Our art classes are both traditional (Painting, Sculpture, Music, Dance, etc.) and contemporary (Conceptual Art, New Media, Performance, Sound Arts), and overlapped with a sustainable subsistence daily. Nature and Sustainability are comprehended on the firsthand experiential level at such sites.

Beyond these two pillars of our educational philosophy is yet another level, prompted by the discovery that creativity itself is increasingly being destroyed in today's youth, at alarmingly earlier and earlier ages. Despite the fact that scientific data for over 25 years supports the fact that art instruction “boosts critical thinking skills... [that] transfer into other content areas, which impacts learning across the curriculum” arts education is being cut across the U.S. and other countries in the west. (Hoi, Samuel. 2013)

In the USA, where youth account for 18% of all violent crimes and 33% of serious property crime, where everyday over 135,000 children carry a gun to school, arts programs have proven to buffer that violent tendency. At-risk neighborhoods that create art programs have found that 80% of participants go on to college as compared to only 20% in the community at large. For youth aged 11 and 12 in an at-risk city in Florida, repeated criminal behavior dropped 64% after a community arts organization was established. (Hoi, Samuel. 2010)

Processing Sustainable Education via Culture and the Arts:

Beyond 2015 Paralleling the UN MDG's recognition of 'process' over the old fashioned 'progress', we encourage global Sustainability Education coming from a ground-up, grass roots knowledge base. This includes the recognition of culture and the arts in an educational model that is transformative and indigenous.

Culture is now recognized as a driver of the economy and even poverty alleviator, by not only cultural and creative industries, sustainable tourism, eco-farms and art centers, but also in the recognition and development of rich cultural heritages. These artistic entities stimulate rural economies, foster entrepreneurship, and revitalize depressed urban and rural subsectors. "Artists are Placemakers: when you bring arts organizations and arts workers into a neighborhood, the place changes to a vibrant and sustainable community". (Landesman, Rocco. 2010)

Our organization, ArtDialogue, is also working closely with the U.N. Safe Planet Campaign, which utilizes the arts as a tool for sustainable education on hazardous chemicals and wastes, via global outreach and exhibitions. We have used this placemaking to advantage over the past three years. In 2012, our 25 cultural and outreach activities reached over a quarter of a million people in seven countries. (All this with a modest budget), but extensive community connections, local networking, schools and academic centers.

The success of this Campaign, housed at UNEP (with the Stockholm, Basel and Rotterdam Synergies Conventions) is due to the groundwork of artists, performers, designers and culture makers in each country. The networks on the ground create transference of information and excitement in learning. We engage grass-roots NGO's and environmental organizations in each country (as well as UN Regional Centers), thereby respecting the local cultural practices and networking systems.

This is the indigenous aspect.

Secondly, outreach and education should include creative activities in non-traditional spaces, what the EU deems "nonformal" education. This is respectful of and embracing traditional places of learning or knowledge sharing-often outdoors or at least out of the classroom. In changing the context of where "school" is, the content is more readily related to place, and the surrounding environment.





Thirdly, non-formal education for environmental issues echoes the very nature and planet we seek to protect and nurture. With the net enrollment of children in primary school considerably slowing since 2004, (web.) we need to drastically look at traditional, local methods of learning as compared to the western “formal” model imposed on so many indigenous cultures and rural regions. As in the arts, process learning is the key to true understanding. One cannot build a sculpture by reading a book on welding. The art student must hold a torch in her hands and learn to handle the balance of fire and gases. “Hands-on” education is the equivalent to “grass-roots” activism.

Nurturing creativity in youth is building cultural capital for the future by teaching emotional understanding techniques and passing on the intellectual tools they will need for problem solving in the 21st century.

Art practices create strong economies and bring in revenue, as witnessed in the \$4.6 billion in state and local tax revenues in Southern California alone (Hoi, Samuel. 2010). The social cohesion created by cultural activities, be them local or international, builds entrepreneurship and a sense of identity.

“.... culture should be considered to be a fundamental enabler of sustainability, being a source of meaning and energy, a wellspring of creativity and innovation, and a resource to address challenges and find appropriate solutions. The extraordinary power of culture to foster and enable truly sustainable development is especially evident when a people-centered and place-based approach is integrated into development programs and peace-building initiatives.” Identification with one’s environment is key to sustainable efforts globally. The arts offer one universal language towards that process. (UNESCO, Hangzhou Declaration. 2013)

Creativity, an innate part of human experience that has fostered our development on this planet for millennium, is indeed jeopardized by the lifestyles we have chosen, and the decisions not enforced. The removal of Culture from the political dialogue has rendered the former to insipid decoration and the latter to corporate control. Inspiring not only the joy of learning in youth, but establishing and protecting the freedom to creative expression is the root of both a sustainable and transformative education as well as civil society.

Neither

should be taken for granted. (Shapiro, Michael. 2012)

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La apreciación estética de la naturaleza

Un camino hacia una relación sociedad- naturaleza éticamente más adecuada

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ABSTRACT

La crítica de la razón instrumental subraya lo mucho que se ha separado la razón y la emoción, entre otras cosas, y que está en el origen de los problemas ambientales. La experiencia estética puede colaborar para hacer frente a esta cuestión y construir nuevas formas de ver, pensar y vivir el mundo. Presentamos una investigación sobre la construcción de sentidos por profesores en un programa de formación permanente en educación ambiental que aborda la experiencia estética como un medio importante para la construcción de los valores. Se puede discernir dos sentidos que surgen de los relatos iniciales del profesorado: el carácter de rectos y de descubrimientos que los estudios representaron.

INTRODUCCIÓN

Desde 1972, con la "Conferencia de las Naciones Unidas sobre el Medio Humano", en Estocolmo, se recomendó la creación de un programa internacional de Educación Ambiental (EA) como un importante paso para la actuación y control de los problemas ambientales.

En el análisis de diversos autores, estos problemas serían resultantes de una crisis más amplia, consecuencia de la visión de mundo o paradigma característico de nuestra civilización. Esta visión, impregnada por el modelo de racionalidad instrumental, mecanicista y cuantitativo (Santos, 1998), reduccionista y simplificador (Morin, 2001), promovió la distinción entre naturaleza y sociedad, hecho y valor, ciencia y ética, razón y emoción, valorando los primeros aspectos en detrimento de los segundos, lo que se encuentra en la base de los graves problemas actuales.

Se suma a ese cuadro de crisis la propia complejidad del mundo contemporáneo. Conforme recuerda Mayer (2002), la promesa de un mundo de seguridad y previsibilidad tejida a fines del siglo XIX fue sucedida en el siglo XX por la realidad de un mundo incierto y complejo, constituido por interconexiones entre todos los componentes de un sistema cuyo límite es el planeta como un todo.

En este sentido se hace imprescindible educar al ciudadano para vivir y actuar en ese escenario complejo. Así, se llama a la educación a contribuir para el enfrentamiento de la crisis ambiental y la construcción de un mundo más humano y sostenible.

Así que, en la Primera Conferencia Intergubernamental sobre Educación Ambiental celebrada en Tbilisi en 1977, organizada por la UNESCO, se establecieron y se difundieron en todo el mundo una serie de principios básicos sobre la EA. Sin embargo, como consecuencia de los varios entendimientos sobre la cuestión ambiental y sobre los propios fines de la educación, existe una diversidad muy grande de propuestas, terminologías y prácticas de EA (Sauvé, 1996).

Destacamos en este texto la perspectiva presentada en el “Tratado de Educación Ambiental para Sociedades Sostenibles y Responsabilidad Global”, aprobado en el Foro de Organizaciones No Gubernamentales, que se reunió en paralelo con las reuniones oficiales de la Conferencia de las Naciones Unidas sobre el Medio Ambiente y el Desarrollo, la ECO-92, celebrada en 1992 en Río de Janeiro.

El foro propuso una visión de conocimiento holística e interdisciplinar, y reconoció en la EA un proceso de aprendizaje permanente y un factor de transformación social. En el tratado se enfatizan diversos aspectos considerados imprescindibles en la construcción de una sociedad sostenible, afirmando “valores y acciones que contribuyen para la transformación humana y social y para la preservación ecológica” (Viezzer y Ovalles, 1994, p. 29).

Por eso en este texto adoptamos la expresión Educación Ambiental (EA) desde esa perspectiva, resaltando la naturaleza necesariamente compleja de este proceso educativo. Este debe comprenderse antes de todo como un proceso de constitución del ser humano, proceso condicionado por las contradicciones sociales, pero que puede contribuir para la transformación de las desigualdades sociales y formación de sujetos autónomos (Rodrigues, 2001) a través de una educación dirigida al ejercicio de la ciudadanía.

A partir de esta perspectiva, concordamos con Carvalho (2006), que señala tres dimensiones que se deben trabajar de forma articulada en las prácticas dirigidas a la EA:

- conocimientos - provenientes de las ciencias naturales y sociales, para la comprensión tanto de hechos y conceptos relativos a la naturaleza y a la relación sociedad-naturaleza como también del propio proceso de producción del conocimiento científico;





- valores éticos y estéticos - para la construcción de nuevos padrones de relación sociedad-sociedad y sociedad-naturaleza;
- participación política - para el desarrollo de la ciudadanía y la construcción de una sociedad democrática.

Sin olvidar la necesidad de una combinación de estas tres dimensiones, en este trabajo enfocaremos la dimensión de valores, centrándonos en la cuestión de la experiencia estética, muy relevante en mi opinión para tratar este tema.

Desde la primera Conferencia de Tbilisi en 1977 se indicó que se debe concebir el medio ambiente en su conjunto, incluyendo en él los aspectos estéticos.

Según Machado (2003), etimológicamente la palabra estética proviene del griego *aisthesis* y tiene el significado de "capacidad para sentir", "la comprensión a través de los sentidos", "percepción totalizadora". La estética es hoy una rama de la filosofía que estudia la belleza y la sensación que induce a los hombres y mujeres, siendo tradicionalmente asociada con el arte.

Junto a este sentido de la estética clásica, según Hermann (2005) lo que aparece en 1750 en el libro "Aesthetica" de Baumgarten, en el discurso contemporáneo la estética "estaría destinada más a lo sensible que a la teoría del arte y se convierte en objeto de consideración en todos los ámbitos de la vida práctica" (p.38).

Siendo así, no sólo frente a obras de arte, sino también a otros objetos, podemos tener una experiencia estética, que es gratuita y desinteresada; lo que llevaría a una "percepción totalizadora" del objeto, la perspectiva de un "nuevo concepto de la razón, que incorpora lo sensible" (Hermann, 2005, p.38).

Teniendo en cuenta estas ideas, la experiencia estética frente a la naturaleza puede significar una posible relación entre los seres humanos y la naturaleza desinteresada, en oposición a la visión sujeto-objeto, reduccionista y de carácter utilitario, estimulada por la ciencia moderna. La apreciación estética nos permitiría ampliar nuestra comprensión de la naturaleza, ya que no se limitaría a la mirada analítica.

En este sentido Forquin (1982), analizando la sensibilización para el medio ambiente como uno de los objetivos de la educación artística, la ve como una tarea tanto política como educativa,

Porque si el público había tenido una mejor sensibilidad, nunca aceptaría ciertas cosas (la destrucción del espacio urbano, por ejemplo, o la devastación de parajes

naturales, etc.). Y es en la escuela, desde la infancia, que se puede forjar una sensibilidad hacia el medio ambiente (p. 27).

Este autor, explicando cómo se llevaría a cabo esa tarea, pone de relieve el papel de las actividades estéticas en el aprendizaje del entorno, que sería la de poner énfasis en los aspectos más directamente sensoriales, sensibles, enseñando a los estudiantes a través de ejercicios de variaciones sistemáticas de los estímulos, porque en nuestra percepción ordinaria, normalmente percibimos mal, muy rápida y superficialmente. Esta sería una educación de las apariencias:

Reconocer los matices de las colores y luces, estudiar los movimientos, los ruidos, evaluar los tamaños y las distancias, sentir los materiales y las formas, tomar consciencia de los ritmos propios de las cosas y de los seres variados, preocuparse por lo que pasa y con lo que queda, con las proporciones y las distorsiones, las similitudes y contrastes, familiarizarse con los valores y las características espaciales de los volúmenes - esa es la base de cualquier dominio efectivo del mundo sensible, esta es la forma de habitar el mundo de una manera más intensa y significativa (p.28).

Según el autor, la tarea no es menos sencilla de lo que parece, porque estamos acostumbrados a la inmediatez de la vida cotidiana, la mirada se dirige a utilidades y no a las apariencias. La sensibilización para el medio ambiente requiere una desviación de la forma habitual: "hay que darse cuenta del mundo como un paisaje, como una suma de estímulos y no como un conjunto de herramientas" (p.29).

De este modo, cuando nos dirigimos a la naturaleza a partir de la experiencia estética, podemos abrir la posibilidad de construir otra forma de relación, que no la reduce a un objeto pasivo que será sometido a examen por un sujeto racional. Ella se aprehendería a través de una mirada estética que no pone la naturaleza (incluida la naturaleza humana) como algo inferior, al ser dominado.

Sin el deseo de mantener la dicotomía que lleva a subestimar la mirada del científico, lo que se propone aquí es el reto de buscar juntarla con la mirada del artista, lo que aumenta las posibilidades de aprehender el mundo y la vida.





También desde la perspectiva estética de Bakhtin tenemos un refuerzo a esta propuesta: desde este punto de vista la apreciación estética es una posibilidad de ampliar nuestra experiencia con la naturaleza, teniéndola como un otro en una relación distinta.

Al tratar de romper la indiferencia actual construida antes de una naturaleza que nos es ajena, la empatía, un momento esencial de la contemplación estética según Bakhtin (2010), puede significar un paso importante. Aunque reconozco con Faraco (en Bakhtin, 2010) que "ni el conocimiento ni la intuición estética pueden ofrecer un acercamiento a la existencia real única del evento" (p.67), porque depende de la disposición moral de la conciencia individual, hay que considerar que "el ser estético está más cerca de la unidad real de la existencia-como-vida de lo que el mundo teórico lo está" (p.66). De esta experiencia, impregnada de una atención amorosamente interesada, se puede "desarrollar una manera muy intensa para abrazar y mantener la diversidad de la existencia concreta" (p.79).

En contra de esa perspectiva, como señala Bakhtin (2010) es la reacción indiferente y hostil, "una reacción que empobrece y desintegra el objeto: se marcha del objeto en toda su diversidad, no le hace caso y lo vence" (p.128), y que caracteriza el tipo de relación entre los seres humanos y la naturaleza que se quiere superar.

Además, desde esta perspectiva bakhtiniana no habría oposición reduccionista entre el conocimiento teórico y el mundo vivido: se considera que el conocimiento, así como los valores acumulados por la humanidad son necesarios, aunque no suficientes, para establecer los actos de cada uno (Bakhtin, 2010). El énfasis en la experiencia estética es para poner de relieve su papel en acercarse al otro, la experiencia fundamental de la acción moral, que, en última instancia, sólo se produce en la relación, no siendo nunca solitaria.

Varios otros autores (Restrepo, 1998; Hermann, 2005; Marín, 2006) corroboran la idea de que la experiencia estética puede despertar un comportamiento ético.

Aunque esta asociación no es de un consenso en el ámbito teórico. Existe, como Hermann (2005) explica: "una amplia gama de modos de relación entre la ética y la estética" (p.36), desde las perspectivas ambiguas, negativas, opuestas y complementarias". Pero algunas reflexiones contemporáneas han señalado para la estetización de la ética, en el que la justificación únicamente racional para la acción moral pierde su fuerza persuasiva.

Mientras advirtiéndole que no es fácil de asegurar la relación directa entre la estética y la sensibilización moral, esta autora la considera como

la promesa de una reconciliación no forzada de lo particular con lo universal, abriendo un espacio de experiencia que no puede ser dada por la justificación racional. [...] La posibilidad es precisamente donde las vivencias de la experiencia estética traen nuevas interpretaciones de los principios éticos y las diferentes maneras de decir el bien, ahora ampliadas por la experiencia del extraño e inesperado (p. 44).

De este modo la educación de lo sensible es considerada crucial en la búsqueda de recuperar una dimensión que se había perdido en nuestra sociedad, marcadamente racionalista. De hecho, la idea de la posibilidad de la interacción de estos dos aspectos no es nueva. Schiller (1995), ya en el siglo XVIII, reconocía en la antigua civilización griega una etapa en que este balance habría existido, cuando "los sentidos y el espíritu aún no se habían estrictamente separado en dos dominios", ocurriendo después su ruptura y haciendo al hombre segmentado: "eternamente encadenado a un fragmento del todo, el hombre puede formarse mientras fragmento" (Schiller, 1995, p.40-41).

En su propuesta de la educación estética del hombre, este autor cree que la naturaleza humana sólo puede ser llevada a la plenitud de su desarrollo en la medida en que se combinan sus fuerzas sensible (sentimientos) y racional, a través de lo que él llama una cultura estética.

Marcuse (2002, p.156), analizando las implicaciones filosóficas y sociológicas de los conceptos freudianos y la dimensión estética, analiza la historia filosófica del término estética. Entiende que, en su significado y función original, él está asociado con el placer, la sensualidad, la belleza, la verdad, el arte y la libertad, entonces "el término abarca una esfera que preserva la verdad de los sentidos, y reconcilia en la realidad de la libertad, las facultades inferiores y superiores del hombre, la sensualidad y el intelecto, el placer y la razón.

Este autor teje comentarios también acerca de las "Cartas sobre la educación estética del hombre" de Schiller, que fueron escritas en gran parte bajo el impacto de la "Crítica del juicio" de Kant. Marcuse (2002), tanto en la obra de Freud como en Schiller,





encuentra la idea de reconstruir la civilización basada en la fuerza liberadora de la función estética, en la que la razón es sensual y la sensualidad es racional.

Estas consideraciones me llevaron a buscar articular una propuesta de trabajo educativo con valores para la Educación Ambiental donde la experiencia estética tiene un papel importante, como explicaré más adelante.

EL TRABAJO CON VALORES EN EDUCACIÓN AMBIENTAL Y EL PAPEL DE LA EXPERIENCIA ESTÉTICA

Como bien afirma Payá (2000), dada la dimensión axiológica de la educación (lo que implica que, explícita o implícitamente, un trabajo con la dimensión de valores está ocurriendo siempre), así como la multiplicidad de concepciones acerca de la finalidad del proceso educativo, hay numerosas propuestas para la educación en valores, por lo que es difícil incluso combinar los diferentes modelos.

Todos ellos, de alguna manera, se ocupan de la dimensión moral – de los valores de la persona, que se caracteriza por su dinamismo y su condición inconclusa, en un proceso que se produce durante toda la vida. Estas propuestas son diferentes en función de diversas aportaciones, derivadas de la filosofía, la sociología y la psicología, que se desarrollan en las propuestas educativas específicas (socialización, desarrollo del juicio moral, clarificación de valores, etc.)

A partir de las limitaciones que tienen esos diferentes puntos de vista, Araújo (1999) hace hincapié en la necesidad de estructurar una teoría moral que aborda la complejidad del ser humano, “un ser que es biológico, afectivo, cognitivo y social al mismo tiempo” (p. 68). Así Puig (1998a), en su propuesta para la formación de la personalidad moral buscará, en el campo de la educación, una integración entre las diferentes propuestas, “en un esfuerzo por compensar las limitaciones que la adopción de un paradigma determinado puede comportar” (Payá, 2000, p.185).

De acuerdo con estos autores (Puig, 1998b; Marques, 1998; Paya, 2000; Puig, 2004; Buxarraís, 2006) que se ocupan de la educación en valores, yo reconozco los beneficios de trabajar con diferentes estrategias de enseñanza, provenientes inicialmente de diferentes enfoques teóricos, con el fin de llevar a cabo un trabajo educativo más amplio.

Con esto en mente y, desde la perspectiva constructivista e interaccionista de construcción de los valores y formación de la personalidad moral presentada por Puig (1988a), concibo un modelo de trabajo con los valores que articula tres dimensiones

(relativas a los diferentes aspectos presentes en las propuestas mencionadas anteriormente), que siempre deben estar conectadas:

- **Cognición:** trabajo de presentación y reflexión sobre las ideas, creencias, sentimientos y conocimientos, de razonamiento acerca de las posiciones y decisiones en situaciones de conflicto relacionadas con el objeto que se asignará el valor (ya sea una persona, un ideal, una situación, etc.), con el fin de promover acercamientos de los significados construidos a su respecto y establecer posiciones frente a los contextos en los que se inserta;
- **Afectividad:** la sensibilización y el compromiso, la identificación y expresión de sentimientos personales; aprehensión estética acerca de lo que quiere asignar valor. En este caso, vuelvo a las consideraciones expuestas por autores como Hermann (2005), Marin (2006) y Restrepo (1998), teniendo en cuenta la experiencia estética como una forma muy significativa de construcción de los valores, por tratar (más) directamente con la esfera de lo sensible.
- **Acción:** el logro de situaciones reales de compromiso con el objeto valioso, buscando en la complejidad de las experiencias, la materialización de lo que quiere apreciar/percibir y reflejar. El establecimiento de un valor, en última instancia, se revelará en el plan de acción como un hábito o actitud coherente con lo que se valora.

Es importante tener en cuenta que estas dimensiones del trabajo con valores no son independientes una de la otra. Así, por ejemplo, para un debate u otra actividad cualquier la dimensión afectiva puede estar presente de forma intensa. Pero, teniendo en cuenta que estas actividades pueden no "afectar" significativamente al individuo, señalo la importancia del trabajo con la experiencia estética, que, junto con otras actividades, y tal vez más allá de ellas, puede permitir que la persona sea afectada de manera positiva, favoreciendo el proceso de construcción de los valores.

Viendo estas dimensiones como una figura, las represento como los aspectos de un triángulo, que incorpora las propuestas anteriores, con respecto a las estrategias que se muestran para trabajar con los valores (Puig, 1998), con la adición de la perspectiva de la apreciación estética (Duarte, Jr, 1988, 2006; Restrepo, 1998; Hermann, 2005; Marin,





2006). No sólo se procura ofrecer oportunidades para la comprensión / reflexión sobre un objeto a ser valorado, sino también para apreciarlo estéticamente, así como, cuando sea posible, para llevarlo a la acción.

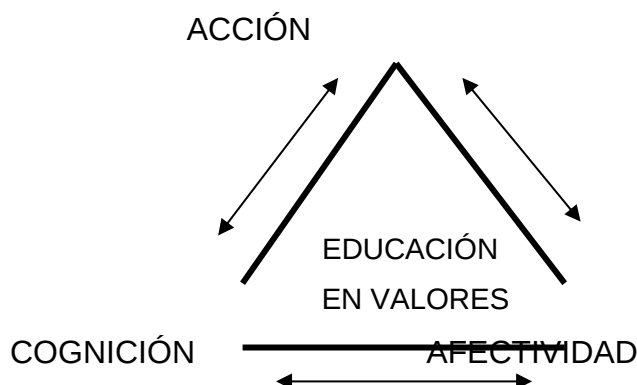


Figura 1 – Modelo esquemático de la educación en valores desde tres dimensiones.

Considero que la relación de estos tres tipos de experiencias puede resultar en una perspectiva más amplia de trabajar con los valores, lo que favorece las posibilidades del individuo de captar, de manera más amplia y eficaz, un determinado objeto a valorar. Se amplían, por lo tanto, las condiciones de su evaluación. Se pretende "un trabajo que reúne simultáneamente las vías afectiva, cognitiva y volitiva persona" (Buxarraais, 2006, p.204), componiendo un trabajo educativo más amplio.

Resumiendo las proposiciones sobre la educación en valores y la dimensión valorativa de la Educación Ambiental, vuelvo al modelo esquemático de la propuesta de educación en valores mostrada en la Figura 1, para insertarla en el modelo propuesto por Carvalho (2006) para trabajar con la EA, como se muestra en la Figura 2.

En este modelo, centrada en la dimensión de valores de Carvalho (2006), esquematizo la articulación de las dimensiones, que tienen como objetivo trabajar con los valores - la cognición, afecto y acción - y con las otras dimensiones - conocimiento y participación política - presentados por este autor.

Así, se destaca la estrecha relación que existe en el trabajo con valores relativo a la cognición, con el trabajo con conocimientos en EA: tal conocimiento, entre otros, se relaciona con el objeto valorado. Reconocemos aquí la superposición entre el conocimiento y los valores: no hay conocimiento despojado de su componente evaluativo y los juicios de valor dependen, a menudo implícita o explícitamente, de los conocimientos que los justifican.

Del mismo modo, teniendo en cuenta la dimensión de la acción, la búsqueda de la realización de acciones que implican al objeto valorado ansía acciones políticas de los individuos, quienes, participando políticamente expresan en esta acción ciertos valores que se dirigen a la construcción de una ciudadanía comprometida con las cuestiones ambientales. Esta es la acción consciente y coherente - no un comportamiento que puede significar sólo un entorno de formación - que estamos tratando de lograr con esa dimensión para la EA que deseamos.

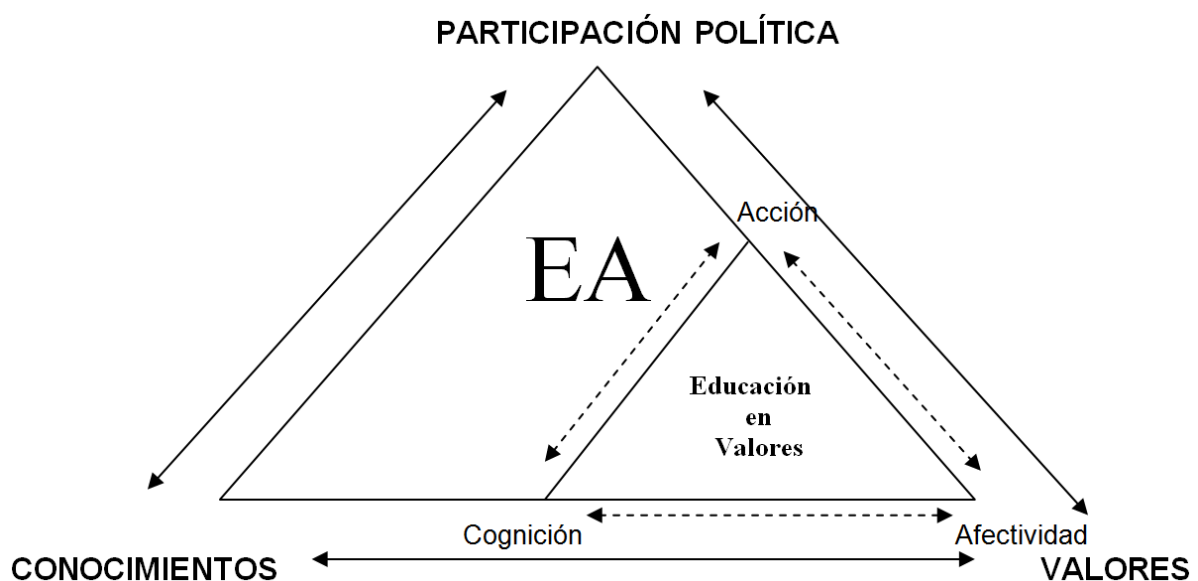


Figura 2 - Modelo esquemático de la educación en valores de Bonotto (2003) que se inserta en la propuesta del trabajo con la Educación Ambiental de Carvalho (2006).

Con este modelo trato de reflexionar sobre algunas de las discusiones que se han presentado, tanto en relación con la educación en valores, tanto en comparación con la EA, sin pretender agotar el tema. La complejidad inherente a estos campos y la naturaleza temporal de las discusiones y propuestas que cualquier sociedad desarrolla en torno a valores y valoraciones, nos invita a una disposición de apertura necesaria y permanente para la revisión y la invención.

LA EDUCACIÓN AMBIENTAL Y LA EXPERIENCIA ESTÉTICA EN LA FORMACIÓN DEL PROFESORADO

A partir del cuadro general presentado podemos reconocer que la formulación y realización por parte de la escuela de prácticas de Educación Ambiental (EA) que traten de los valores no constituye una tarea simple. La EA implica el desafío del cambio de





visión de mundo, de valores y prácticas, un proceso de aprendizaje que involucra a todos los ciudadanos de la sociedad, incluso a los propios educadores. Así que, centrados en ese modelo y retomando nuestros intereses relativos a la EA, explicitamos uno de los desafíos que se enfrenta para realizar un trabajo adecuado de EA: la formación del profesorado.

En las últimas décadas, la formación del profesorado ha despertado gran interés en todo el mundo, consolidándose como un relevante objeto de investigación. Este movimiento "ayudó a amenazar el paradigma de la racionalidad técnica que caracterizó la formación inicial y permanente" (Brzezinski, 2006, p.28/29), revelando la complejidad de la enseñanza.

Mientras que la mayoría de los docentes brasileños en ejercicio no tuvo en su formación inicial contacto con el tema de medio ambiente, relativamente nuevo en el ámbito educativo (Manzochi y Carvalho, 2008), surgió, de mi parte, el doble interés de ofrecer programas de formación e investigar el proceso de aprehensión de este tema y su materialización en las prácticas educativas orientadas a los valores, mi foco de interés más particular.

Entendiendo que la experiencia estética puede desempeñar un papel clave en el proceso de creación de valores, he intentado profundizar las reflexiones en este sentido, así como vengo buscando entender, desde las investigaciones relacionadas con la formación de los maestros, cómo los docentes se apropian de esta discusión y la incorporan en sus prácticas.

Desde el año 2008, a partir de las actividades de un programa de educación permanente para los profesores centrados en el tema "Educación Ambiental y el trabajo con valores", fue posible articular la intervención educativa para la investigación de ese proceso (Bonotto et al, 2010; Bonotto, 2012), investigación que se ha desarrollado a partir de un enfoque cualitativo (Bogdan y Biklen, 1994).

Así, al mismo tiempo que se realizan de actividades de formación, los reportes presentados por los profesores y las prácticas desarrolladas por ellos constituyen los datos de la encuesta, recogidos a través de distintos instrumentos: cuadernos de campo, filmación de las reuniones del programa formativo, de las clases impartidas por maestros, más allá de todo el material producido en este proceso (informes escritos, planes de lecciones, evaluaciones del programa formativo, etc.).

En una de esas investigaciones (Bonotto et al, 2010), se buscó identificar entendimientos y prácticas que un grupo de profesores de diferentes asignaturas

construirían en el proceso de formación. Fue posible identificar las dificultades para hacer frente a la apreciación / expresión estética. Los profesores mostraron dificultades para entenderlas en su sentido más amplio y también para insertarlas en sus actividades de enseñanza (Rodrigues y Bonotto, 2011). Varios factores pueden estar relacionados con esta situación, como las barreras institucionales (ausencia o desconocimiento de esta práctica por la escuela en los grados finales y disciplinas comunes distanciadas de estas actividades), asuntos personales (falta de experiencia, de toda la vida con el arte en sus diferentes formas expresión, provocando el alejamiento de este trabajo) o de otro tipo, que la investigación no ha permitido identificar.

Paralelamente a estos hallazgos, reconozco que el proceso de construcción de los sentidos sobre los valores ambientalmente deseables y la educación orientada al trabajo que incorpora esos valores es un tema que merece ser investigado ampliamente.

Así actualmente me puse a investigar la construcción de sentidos por los profesores implicados en el trabajo con la dimensión de los valores en la educación ambiental.¹ Trato de examinar esa cuestión buscando por los espacios de la contestación de la ideología hegemónica y las posibilidades de construcción de valores deseables desde el punto de vista ambiental, a partir del análisis detallado de los reportes y trabajos realizados por los profesores en el programa de formación del cual participan.

La investigación se inscribe en la perspectiva bakhtiniana de producción de sentidos. Desde el momento en que asumimos, para el trabajo educativo, el diálogo como un aspecto fundamental del desarrollo humano y de la construcción de valores, nos acercamos a los autores y referencias que tienen esa perspectiva, lo que nos lleva a la perspectiva del dialogismo bakhtiniano y producción de sentido.

Reconociendo que la dimensión de valores se refiere a los fenómenos humanos complejos, difíciles de captar y de construcción no inmediata, se espera que, por lo menos, el proceso de formación permitirá acercarse a las reflexiones, las posiciones y los valores de interés social, de modo que las propuestas y estos valores puedan "tener sentido" para los estudiantes.

En este proceso, algo que ya está construido sobre la experiencia pasada o actual puede ser reconocido y reforzado, mientras que los viejos patrones pueden cambiar o

¹ Proyecto de investigación: "Educação Ambiental e valores: sentidos construídos por professores em formação continuada" (financiamento CNPq - Proc. N.483563/2012-9).





permanecer intactos, modificarse mucho o poco, en una construcción que se desarrolla en medio del diálogo que se establece en el grupo, cuando las ideologías hegemónicas y cotidianas afanan continuamente para establecerse (Miotello, 2005).

Como ocurrió en años anteriores, el programa formativo se organiza con tres tipos de actividades:

- la apreciación de trabajos artísticos (poemas, películas, fotos);
- el estudio y discusión de textos teóricos (sobre la cuestión ambiental, la educación y los valores);
- la creación y desarrollo de actividades de enseñanza para alumnos de primaria y secundaria.

Todas las actividades con el grupo de profesores que participan en este programa de educación continua se pueden filmar, así como otras posibilidades que se pueden tener de otras fuentes de recogida de datos (cuestionarios y entrevistas desarrolladas concomitante o subsecuentemente del programa de formación) constituyen los datos para análisis y se están recogiendo.

En un conjunto de datos iniciales relativos a reflexiones que algunos profesores hicieron se pueden discernir dos sentidos que surgen de las discusiones: el carácter de rectos y de descubrimientos que estos estudios representaron, como los siguientes extractos pueden indicar:

(...) Cuanto más participo en las discusiones en las reuniones, leo y reflexiono sobre el tema de la Educación Ambiental, más me doy cuenta de que este es un tema muy complejo y delicado. Este tema va mucho más allá de las actividades superficiales habitualmente desarrolladas en las escuelas. (M.)

Una idea interesante también se resume en el triángulo: Acción - cognición - la afectividad, donde estas tres dimensiones siempre deben estar conectadas, ofreciendo un trabajo eficaz con los valores en la práctica (...) Tenemos que identificar los valores de la sociedad para comenzar entender los problemas ambientales y sus complejidades, y así modificarlos y actuar sobre ellos. (C.)

(...) La apreciación estética: la reunión [del programa de formación del profesorado] fue muy esclarecedora. Es fácil de trabajar con diversas dinámicas y proporciona una gran oportunidad para discutir la ética y los valores. (T.H)

La recogida completa de datos y el posterior análisis que se seguirá reforzarán o ampliarán esta red de sentidos con otros nuevos que se pueden construir.

FINALIZANDO

Sea considerando la EA en general, sea considerando el trabajo específico con los valores, considero que la experiencia estética se presenta como una importante experiencia educativa.

Sin embargo, ella requiere, entre otras cosas, tiempo: tiempo para la observación minuciosa, la apreciación repetida, para educarse para apreciar, que es más que ver. Como expone Forquin (1982), en nuestra percepción ordinaria normalmente percibimos mal, muy rápida y superficialmente.

Así la educación continuada puede ofrecer oportunidades a los maestros para el contacto y la apreciación de diferentes formas de expresión estética, con el fin de proporcionarles el desarrollo de la propia sensibilidad, ya que a menudo no tuvieron contacto con ella en su formación como personas.

Pero hay que tener claros los límites de esa formación: de plazos, de experiencias posibles, y otros más que las investigaciones pueden ayudar a identificar. Así como pueden ayudar a identificar las posibilidades de que esa educación puede ofrecer para hacer frente a ese mundo establecido, ciertamente insostenible.

Esto implica la revisión de los valores actuales, la creación de nuevos valores, la recuperación de los valores que han sido olvidados, construyendo nuevos sentidos posibles para aprehender y estar en el mundo, proceso para los cuales la experiencia estética tiene mucho que aportar.

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Una mirada ambiental desde la fotografía

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Abstract

Como respuesta a la crisis ambiental existente, es que hemos creado un proyecto que tiene como objetivo movilizar las emociones y sentimientos a través del arte. Es la fotografía a la que recurrimos como recurso para que los estudiantes de Educación Primaria en la Ciudad de México, tengan la posibilidad de conocer y entender los diferentes paisajes locales que se han ido modificando por la intervención del hombre con la finalidad de sensibilizarlos en la búsqueda de acciones que mitiguen los efectos de la crisis.

Panorama general

El hombre desde tiempos remotos ha tenido que enfrentar innumerables inconvenientes para mantenerse como especie sobre la faz de la Tierra: el hambre, el calor, el frío y otros riesgos del medio en que se desenvolvían, obligaron a nuestros antepasados a buscar nuevas relaciones con su medio y actitudes ante la vida.

Con el paso del tiempo dichas relaciones no han sido tan eficaces y éstas se complicaron en la medida en que la industria y la tecnología avanzaron, aunado a que los sistemas económicos y políticos de las naciones han centrado su atención en acrecentar día a día su fuente de poder y dominio, haciendo que sus acciones trasciendan y pongan en riesgo los recursos naturales de los países dependientes y la calidad de vida del ser humano.

A consecuencia de ello, hoy enfrentamos fenómenos como el efecto invernadero, la desertificación, el agotamiento de los recursos, la pobreza, el reparto injusto de la riqueza, la desigualdad en las relaciones entre los pueblos, ejemplos fehacientes de los efectos de la ambición e irresponsabilidad del hombre y a los cuales hoy, reconocemos como síntomas de la crisis ambiental¹.

¹ Leff, Enrique (2000:7-8) La crisis ambiental entendida como crisis de civilización es de nuestro tiempo. El riesgo ecológico cuestiona al conocimiento del mundo. Esta crisis se nos presenta como un límite en lo real que significa y

Ante esta realidad emerge la educación ambiental² como una alternativa que responde a esta crisis, que encuentra en ésta como un medio para la construcción de un mejor futuro. Mientras la crisis se agudiza, según dice Benítez (2010): “crece el imperativo de una educación humanista, que aproxime al ser humano al cuestionamiento de su propia realidad, que lo impulse a saberse parte de una muy larga y compleja cadena de vida y que lo motive para la esperanza, para la transformación, para la construcción de alternativas”. Por esta razón la educación ambiental es una necesidad en la escuela, en el salón de clase, en la comunidad y en todo lo que rodea al estudiante.

En este tenor, nuestra propuesta se fundamenta en superar la postura de considerar la educación ambiental como una asignatura más y verla como la posibilidad de que los niños y niñas del tercer ciclo de Educación Primaria en la Ciudad de México logren sensibilizarse y reflexionar ante las consecuencias de los síntomas de la crisis que viven en su contexto más cercano y por ende propongan acciones viables y pertinentes a su realidad.

“Una mirada ambiental desde la fotografía “nombre asignado al trabajo, vincula elementos básicos que los Programas de Educación Básica 2011 pretenden favorecer en el alumnado: el desarrollo de habilidades tecnológicas y su utilización para fortalecer la competencia artística. Al respecto en el Programa antes mencionado se señala: “La competencia artística y cultural se manifiesta cuando los estudiantes son capaces de comprender y apreciar las diversas formas de representación del arte así como cuando participan como creadores y/o espectadores sobre la reflexión acerca de su entorno y otros contextos con base a sus vivencias artísticas y culturales” (SEP, 2011)

La idea anterior contribuye a reforzar la columna vertebral de esta propuesta, que radica en el que los estudiantes de quinto y sexto grado de primaria expresen sus ideas, pensamientos y reflexiones en relación a su medio ambiente más cercano teniendo como punto de partida la fotografía que ellos mismos capten de los espacios, momentos, personas y circunstancias que sean de su interés. Al realizarlo, convergen el arte en su expresión fotográfica y el medio ambiente.

reorienta el curso de la historia: límite del crecimiento económico y poblacional, límite de los desequilibrios ecológicos y de las capacidades de sustentación de la vida; límite de la pobreza y la desigualdad social.

² Souvé Loucie (2011) señala que la EA tiene como objetivo inducir la dinámica social, primero en la comunidad local y consecuentemente en redes más amplias de solidaridad, promoviendo un enfoque colaborativo y crítico hacia las realidades socio-ambientales, y una comprensión autónoma y creativa de los problemas actuales y las posibles soluciones.





El acercamiento frecuente con las artes visuales puede ser aprovechado cuando además de resaltar en el ser humano expresiones como el sentir, disfrutar y pensar, también son generadoras de conocimientos. Los elementos anteriores en su conjunto representan la condición básica para formar seres humanos sensibles ante el medio ambiente y sus problemas lo que les permitirá en un segundo momento reflexionar y actuar al respecto.

La propuesta

“Una mirada ambiental desde la fotografía”, se fundamenta con tres elementos básicos:

1. *Arte*: Consideramos las aportaciones de John Dewey (2008) que relaciona la experiencia estética con la vida cotidiana y la sensibilidad de las personas, permitiendo así desarrollar una vida más digna e inteligente. Del pensamiento de Eisner Elliot (2005) retomamos que mediante el arte se pueden llegar a expresar los valores que resultan más apreciados y ofrecer algunas afirmaciones sobre la condición del hombre, de la nación y el mundo con lo que se contribuye a producir conocimiento.

En el campo de la fotografía, Kathrin Peters (2013) reitera que el arte es expresión, transmisión y sentimiento; que es una forma de conciencia social que tiene por objeto satisfacer las necesidades espirituales de las personas haciendo uso de la materia, ya sea a través de la pintura, escultura, cine, música, etc. pero resalta la importancia de la fotografía en el campo del lenguaje artístico.

No obviamos mencionar que se han consultado diversas fuentes para conocer y comprender la función de la fotografía en el arte, entendiendo que ésta es considerada como tal desde el siglo XIX cuando aparece el naturalismo como tendencia artística de la época. Características de este movimiento son la objetividad y la búsqueda de la realidad y la naturaleza con un alto grado de perfección. El naturalismo entonces, se convierte en la puerta que se abre para dar a la fotografía un acercamiento hacia el arte (Ortega, 2012).

Este elemento es el que da la connotación humanista a la propuesta.

2. *Mediación*: Un elemento clave de la propuesta es la “mediación” por lo que recurrimos a la Teoría de la Experiencia de Aprendizaje Mediado de Reuven Feuerstein (1991), que afirma que todos los seres humanos se pueden desarrollar gracias a la intervención pedagógica de un mediador. Para tal efecto se debe cumplir con tres elementos básicos: el maestro como mediador, los alumnos como sujetos activos en el desarrollo de sus habilidades y las obras de arte como estímulo.

En nuestro caso, la fotografía representa el “estímulo” didáctico a través del cual el o la docente debe intervenir (mediación) con una serie de preguntas que se elaboran previamente y que tienen como finalidad activar la observación, el pensamiento, la reflexión y la expresión de los estudiantes (repuesta de los sujetos) en función de su medio ambiente.

Con esta perspectiva, se supera el paradigma conductista, dando apertura al paradigma social en donde el nuevo conocimiento se logra a través del mediador humano. La acción de la mediación docente afecta la estructura mental del estudiante (modificación cognitiva) permitiéndole adquirir nuevos comportamientos, vistos como estrategias de aprendizaje, habilidades y actitudes (Román; Díez, 1988).

Debe quedar claro, que el y la docente no deben transmitir información que para ellos sea significativa, su intervención en esta propuesta debe favorecer que el estudiante sea el constructor de su propio aprendizaje, esto es, que el niño y la niña deben elaborar sus propias concepciones del medio ambiente que le rodea, entenderlo, conocerlo y crear nuevas formas de actuar en él con una visión y postura ética que conlleve a la construcción de una sociedad sustentable.

Para esos efectos, el lenguaje es relevante y es aquí donde se retoma la postura de Vygotsky que dice que éste (el lenguaje) es una herramienta fundamental del mediador y es por eso que la pregunta se convierte en su estrategia principal.

Con la pregunta, los profesores generan el conflicto cognitivo que puede llevar a los estudiantes a movilizar sus conocimientos para generar nuevos, se pueden crear dudas, motivándolos a comprender o resolver problemas, puede facilitarles la interiorización de conocimientos y aplicarlos a diversos contextos por nombrar tan solo algunos beneficios en el ámbito de la educación ambiental.

3. Medio ambiente: Existen diferentes posturas con respecto a la concepción de medio ambiente, sin embargo para efectos de este trabajo consideraremos la postura de González Gaudiano (1999) que destaca que no solamente está constituido por factores físico-naturales, sino también los económicos, sociales, culturales, etc.; que no debe confundirse únicamente con la naturaleza y que es un concepto de gran amplitud y globalizador que incluye todo con lo que nos relacionamos.

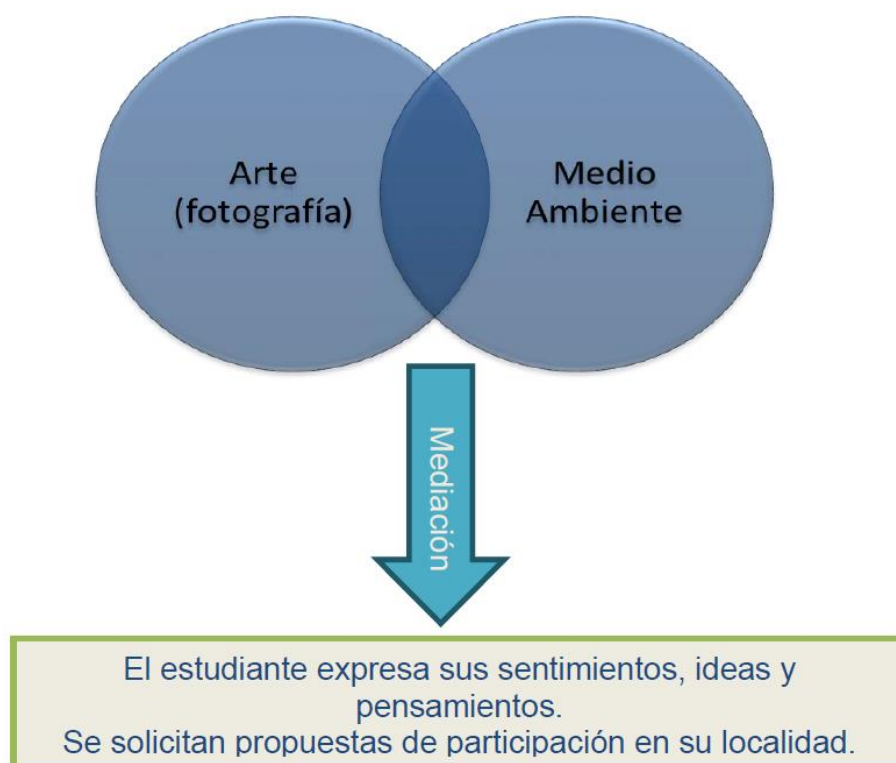
De Gilberto Gallopín (2000) retomamos su pensamiento en cuanto que el medio ambiente lo conforma un medio natural o físico y un medio humano o socio-económico que abarca acción del hombre sobre el medio. Este último aspecto es el que consideramos relevante





para esta propuesta, ya que ésta se pone en práctica con estudiantes de escuelas primarias de zonas urbanas, donde la acción del hombre es evidente.

Recurrimos también al pensamiento de Loucie Sauvé (2002) quien dice que es complicado definir qué es el medio ambiente por la complejidad que implica, sin embargo, propone desmenuzar los elementos que la representan. Menciona entonces que medio ambiente puede entenderse como naturaleza, recurso, problema, sistema, contexto, territorio, paisaje, biosfera o proyecto comunitario. Dice, que es mediante el conjunto de estas dimensiones interrelacionadas y complementarias que se despliega la relación del medio ambiente.



Cuadro 1. Gráfica que muestra la estructura general del Proyecto
 “Una mirada ambiental desde la fotografía”

En las sesiones de trabajo – donde se analiza cada fotografía - los rasgos enunciados por Sauvé son considerados cuando el o la docente intervienen al momento de proponer interrogantes que sirven de guía para el análisis de cada imagen.

Finalmente, resaltamos que todas las posturas enuncian la interacción del medio biofísico y social pero es el CONANP (Comisión Nacional de Áreas Naturales Protegidas) donde se destaca que dicha interacción se encuentra mediado por la cultura en un momento histórico, aspecto que consideramos relevante porque los sucesos socio-culturales se ven determinados por los hechos políticos y económicos del momento.

En las fotografías generadas por los estudiantes, quedan plasmados esos sucesos y hechos que determinan una realidad medio-ambiental que será reconocida y re-construida para efectos de unas condiciones de vida más segura y digna.

La aplicación

La aplicación inicia cuando los estudiantes del tercer ciclo de educación primaria de la Ciudad de México recorren su comunidad y toman las imágenes fotográficas que sean de su interés. Utilizando los recursos tecnológicos con los que cuenta la escuela (aula digital); se presenta la fotografía seleccionada por el grupo, la cual será observada detenidamente iniciando así un espacio de diálogo donde el o la docente fungen como mediadores. Este es el momento preciso en que los estudiantes expresen sus sentimientos, ideas y pensamientos.

El docente-mediador debe favorecer el proceso de reflexión y análisis proponiendo las preguntas que guíen el desarrollo de la sesión. Los planteamientos se dirigen a resaltar la importancia del medio ambiente que se ve plasmado en dicha imagen, por lo que los cuestionamientos giran en torno a los siguientes niveles:

- Cognoscitivo de comprensión: ¿qué es lo que observas?, ¿qué tipo de ambiente ves?; ¿cuáles son tus sentimientos cuando observas la fotografía de tu comunidad?, ¿qué es lo que más te agrada del paisaje observado a través de la fotografía?; ¿qué es lo que más te disgusta?.
- Cognoscitivo de análisis: ¿cómo ha afectado la mano del hombre el medio que observas en la imagen?; ¿qué síntomas de la crisis ambiental se observan en la fotografía?; ¿qué acciones de las que realizas de manera cotidiana, contribuyen a la creación del medio ambiente que observas?
- Cognoscitivo de síntesis: Antes de iniciar el siguiente nivel se sugiere investigar cómo era el ambiente años anteriores al espacio y/o lugar fotografiado, es entonces que se preparan preguntas tales como: ¿qué diferencias y/o semejanzas encuentras entre las dos fotografías?; ¿cuáles de los dos ambientes representan una mejor calidad de vida para sus habitantes y por qué?; ¿cuáles son las causas y/o consecuencias de los síntomas de la crisis ambiental observado en la fotografía?; ¿qué acciones propones para mejorar el medio ambiente actual?; ¿cuáles de esas acciones puedes llevarlas a cabo en tu casa, escuela y/o comunidad? ¿por qué?





- Cognoscitivo de evaluación: ¿Cuáles de las propuestas de acción planteadas son viables y pertinentes para su aplicación?

Pasos a seguir

A continuación se presenta la ruta metodológica sugerida:

- El recorrido por la comunidad escolar, puede ser organizado por el docente como actividad grupal o como tarea individual. Los alumnos y alumnas toman las fotografías que sean de su interés. Ya en la institución escolar se selecciona la fotografía que los estudiantes desean analizar (Fotografía 1).
- El docente realizará una serie de preguntas que deben enfocarse a la descripción del medio ambiente observado en la fotografía. Así mismo es importante que los alumnos y alumnas comenten en este momento sus sentimientos y emociones al destacar cómo es su comunidad.
- Búsqueda de fotografías del lugar y espacio correspondiente a la toma realizada por los niños y niñas. Estas deben ser de años anteriores, lo importante es que se observen los cambios que han existido al paso del tiempo. Pueden recurrir a diferentes fuentes: internet, con familiares y/o amigos, museos locales o delegaciones políticas.
- Una vez que se tiene el material, el profesor o profesora proceden a realizar las preguntas que conlleven a que los estudiantes comparen la fotografía actual (Fotografía 1) con la fotografía antigua (Fotografía 2). La intención en este momento es que los docentes intervengan para que se logre favorecer la reflexión y análisis con respecto a cómo ha cambiado el paisaje, cómo y por qué de este efecto, cuáles son las causas y consecuencias de los síntomas de la crisis ambiental observada en la localidad, etc.
- La actividad anterior deberá generar en los estudiantes el que propongan acciones relacionadas con los problemas ambientales (síntomas de la crisis) detectados por medio de la fotografía y que además sean viables y pertinentes para practicar en su familia y escuela.
- Se sugiere dar el seguimiento de dichas acciones utilizando como recursos el diario de campo o bitácora. La información que se obtenga de estos materiales será utilizado para evaluar el proyecto.

Se comenta que las preguntas que ese presentan en este documento son tan solo algunas sugerencias para el docente, ya que el deberá crear sus propias interrogantes de

acuerdo a la dinámica y características del grupo. Sin embargo no hay que olvidar que existen tres momentos:

- El descriptivo.
- El reflexivo.
- Propuestas de solución
- Seguimiento y evaluación.

A Manera De Ejemplo

Las tres siguientes fotografías muestran el mismo espacio, vista desde diferentes ángulos.



Fotografía 1 Calle de Cairo esquina con Avenida Clavería, Colonia Clavería Azcapotzalco D.F. Día de captura de la imagen: Sábado 10 de noviembre del 2012. Hora aproximada 9:30 hrs. Fotografía realizada por un alumno de la escuela primaria José Arturo Pichardo.

La razón por la cual el alumno le interesó este espacio fue porque al investigar acerca de la comunidad donde se encuentra ubicada su escuela, encuentra la siguiente fotografía que representa el mismo espacio físico en el año de 1936.





Fotografía 2

Algunos comentarios de los niños:

En la primera parte de la actividad los niños y niñas describen su comunidad de manera eficiente, sin que la comunicación se un obstáculo en esta tarea.

Después realizan comentarios relacionados con su colonia diciendo que es bonita, aunque les disgusta que en la calle donde se encuentra su escuela estacionan dicen que no les agrada que tanto a la entrada como a la salida de la escuela, lleguen muchos coches que obstaculizan la circulación de otros autos, que los padres de familia se enojen porque no los dejan pasar y que toquen el claxon de manera continúa. También comentan que les desagrada ver en la calle con mucha basura, sienten tristeza y también enojo porque esas situaciones podrían solucionarse si todos los miembros de la comunidad participaran para mejorar dichos eventos.

Enuncian como síntomas de la crisis ambiental: contaminación del suelo, agua y aire. Reconocieron el ruido como otra forma de contaminación, la drogadicción y alcoholismo como problemas de la comunidad. Al tráfico como consecuencia de un excesivo número de vehículos que circulan a la misma hora y causante de la contaminación atmosférica. La acumulación de los desechos sólidos como consecuencia del alto índice de consumo.

Comentaron que el hombre ha sido el causante de todos los problemas ambientales que se viven en la actualidad, porque buscan tener más dinero, más comodidad y más poder.

Dicen que no les interesa que los recursos naturales se acaben y que a futuro, sus hijos no tendrán agua para beber.

Dicen que ellos (los niños y niñas) también son responsables, dado que consumen muchos objetos de unicel, fomy, plástico, etc. que incluso podrían sustituirlos por otros que contaminen menos.

Cuando realizan el comparativo entre el antes y ahora del paisaje realizan muchos comentarios al respecto, sin embargo el que más destaca es el que hacen con respecto a que antes había menos personas, coches y basura. Dicen también que se ve más tranquilidad en las calles. Las casas menos altas.

Algunas de las acciones sugeridas para realizar en la escuela son:

Separación de la basura.

No utilizar unicel, fomy ni plásticos.

Solicitar a los padres de familia que los lleven a la escuela caminando para no utilizar el automóvil, en especial los que viven cerca del plantel.

No desperdiciar el agua.

Apagar las luces de los espacios que no utilicen.

Lo anterior es tan solo un resumen de lo que realmente se desarrollo con los niños y niñas de los grupos donde se aplicó nuestra propuesta. En estos momentos todavía se realiza el seguimiento correspondiente por lo que todavía no se realiza la evaluación final.

Algunas conclusiones

Nuestra propuesta se ha aplicado desde noviembre del 2012 en la escuela primaria José Arturo Pichardo que se encuentra ubicada en la calle de Otoño No. 64 Colonia Ángel Zimbrón, Delegación Azcapotzalco, México Distrito Federal.

La aplicación nos ha dejado como resultado que los estudiantes:

- ☐ ☐ Han logrado reconocer los síntomas de la crisis ambiental en su comunidad.
- ☐ ☐ Expresan sus ideas, pensamientos y reflexiones en relación a su medio ambiente más cercano teniendo como punto de partida la fotografía.
- ☐ ☐ Utilizan las tecnologías como medio para acercarse al arte.
- ☐ ☐ Han establecido relaciones entre las causas y consecuencias de los sucesos ambientales locales tendientes a tener un panorama nacional y mundial.
- ☐ ☐ Han establecido acciones que son aplicables en su contexto familiar y escolar con la finalidad de contribuir a mejorar la situación ambiental de su comunidad.





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Fostering creativity in learning about sustainability through engagement in constructionist activities

Applying a constructionist approach to learning and teaching about sustainability

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ABSTRACT

Creative thinking is among the core abilities needed to be fostered to develop a more integrated understanding of sustainability and in order to achieve a more sustainable world. In this paper we describe the design of a pedagogical intervention focused on enhancing creativity within a constructionist learning framework (Papert, 1993), where Greek high school students collaboratively generate new ideas and meaningful digital artefacts through active engagement with a digital game microworld based on the idea of sustainable city, and then we discuss the findings from studying its implementation.

Introduction

Environmental and sustainability issues are among the key topics in most educational curricula worldwide. Fetting involved with issues of this sort at a pedagogical level is considered a *sine qua non* condition for people to better understand current reality, to develop their action competence in bringing socio-environmental change and in order to envision a more sustainable future (Huckle & Sterling, 1996; Jensen & Schnack, 1997; Scott & Gough, 2004; Robertson, 2007). However, these issues are by nature complex, controversial, value-laden and dense with conflicting social interests. Teaching and learning about them requires from educational designers and teachers to find ways to engage learners with the exploration of the various perspectives inherent in them as well as to help them become acquainted with systemic ways of thinking of them (Bardwell, Monroe, Tudor, 1994; Scott & Gough, 2004). It also entails critical reflection on the structural value systems that fuel these issues and challenging of the established individual and social practices and lifestyles leading to their creation. However, this is a genre of knowledge that builds not only on 'objective' scientific data, but also on the values, speculations and emotions which arise through personal and collective reflection and action processes in relation to these issues (Sterling, 1992; Huckle & Sterling, 1996; Tsevreni, 2011).

Surprisingly enough, the contribution of digital technologies in the design and implementation of educational activities of this genre has hardly become the focus of research and





educational practice so far. Although some digital applications have been recorded in the fields of Environmental Education (EE) and Education for Sustainable Development (ESD) (Paas, 2008), in reality they are an ad hoc response to alleged educational needs; they are based on vague theoretical frameworks; and they are not necessarily amenable to an evaluation of their substantial pedagogical value. What is further documented is a lack of theoretical and empirical exploration of the learning potential for EE and ESD offered by some new technological tools and their associated practices. This is particularly true in the case of digital games. Even though a growing number of children and young people have become really passionate about them by spending a considerable amount of their time in playing them, there has not been expressed a strong interest from the part of EE research in exploring the implications for educational practice. What should be nevertheless taken into consideration is what Hewitt & Forte (2006) argue, that young people are more actively involved in learning when elements related to their everyday digital practice are incorporated in it. Despite the evidence, EE and ESD have minimally opened their scope towards investigating digital game-based environmental learning, either in the context of children's informal playing, or as a potential pedagogical tool for supporting EE practice in school settings (Kynigos & Daskolia, 2011).

So, how can we get students into creatively generating meanings around environmental and sustainability issues by engaging them in appropriately designed learning activities centred around the use of digital technologies? In this paper, we describe the design of such a pedagogical intervention, where students collectively tinker, negotiate and come up with a digital game based on the idea of sustainable city. Following, we discuss our findings from studying the implementation of our design, by focusing more particularly on identifying the creative potential of the students' engagement in this task.

Unfolding the inherent creative potential of teaching and learning about sustainability

Sustainability as a concept is by nature complex, fuzzy and ambiguous, and therefore difficult to address. Complexity stems from its multi-faceted character and the need to apply simultaneously various perspectives to grasp it holistically (Liarakou, Daskolia & Flogaitis, 2007). Alongside this there are so many suggestions of what sustainable societies should look like and what changes are needed to achieve sustainability that a great degree of uncertainty and indeterminacy is attached to defining what 'most sustainable' means (Wals, 2010a). What is also considered as sustainable now might turn out not to be in the future or may acquire a different meaning in another context. These features render sustainability elusive and ambiguous as a concept and therefore 'difficult' to teach if approached through a traditional pedagogical lens.

However, it is this very 'fuzziness' characterising sustainability, we argue, that can be turned into a fruitful arena for creative thinking. This 'appealing vagueness' Redclift (1994) identifies in the concept turns it into a 'boundary object' (Star & Griesemer, 1989): a 'plastic'

enough entity to be interpreted and employed by more than one group or communities in ways that make sense to them; and at the same time a 'robust' enough construction that manifests a common identity across all groups and communities. This approach towards viewing sustainability is very close to what Meggill (1995) calls 'heuristic relativism', that is the recognition that there are limits in the ways our perspective allows us to develop a fully-fledged view of a situation and that we need to stand off and explore others' or alternative perspectives as complementary frames for better grasping reality. From a pedagogical point of view, dealing with 'boundary' concepts through a heuristic relativism frame of thinking provides many opportunities for teachers and learners to get engaged in dialogical forms of meaning-construction and perspective-sharing and to expand the 'boundaries' of their knowing of and being in the world.

This is nevertheless what some would identify as the essence of creative thinking and learning (Fernández-Cárdenas, 2008). In either way, education has to cultivate learning approaches leading to the creative appropriation of knowledge for students so that they become capable of developing a more integrated understanding of sustainability. It has also to foster creativity by facilitating alternative thinking and the emergence of new ideas for empowering young people to envision and design a more sustainable world (Wals, 2010a).

Fostering learners' creativity through constructionist activities

Recent developments in the study of creativity emphasize the inherent complexity of the phenomenon, the collective character of creative processes and the "situatedness" of the activities (see Daskolia, Dimos & Kampylis, 2012). Among current trends in the conceptualization of creativity is that it is not necessarily related to some exceptional ability but rather to a potential everyone is capable of displaying, which may be expressed at various manifestations of a person's everyday life, it is fuelled by collective processes and is possible to be fostered through education. However, in most current educational theories there is a lack of explicitly stressing how to foster the learners' creative potential.

Our joint quest for appropriate pedagogical models and theories to address and study creativity in education led us to Constructionism. We view Constructionism, either as an epistemology or a learning theory, as giving distinct emphasis to the learners' creative expression and learning through their active exploration, modification and creation of digital artifacts (Papert, 1993; Kafai & Resnick, 1996). From a constructionist perspective creativity is mainly identified with the generation of new/novel tangible output(s) (digital artefacts). Digital media - *microworlds* in particular - are perceived as appropriately designed environments and tools that learners can use to construct 'meaningful objects' (Papert, *ibid*; Kynigos, 2007). These objects are the tangible outputs of the learners' discursive, meaning-making processes while they interact with the





microworlds and the learning context. They are at the same time representations of their ideas and understandings of the 'world'.

Constructionism attributes equal importance to the creative tool (the microworld), the creative product (the artefact) and the creative process of learning. Actually there is a symbiotic and synergetic relationship among the three: the microworld is designed to evolve along with the knowledge its users develop while they tinker with it and the artefacts they create. Particular emphasis is nevertheless placed on the learning context within which both constructionist activities as processes and products occur (Resnick, 1996). Open-ended technological and learning environments that treat microworlds as 'boundary objects' and allow learners to use them in personally and collectively meaningful ways, to collaboratively work with and discuss over them and their key concepts, or to question them and get into modifying them to improve them, are important coordinates of a context fostering various forms of creativity. We therefore argue that the seeds already exist in the theory of Constructionism to address and study creativity through a more integrated conception, that is as a function of a *person's ability*, presuming an intentional *process*, occurring within a specific learning *environment* and entailing the generation of new *products* (Kampylis & Valtanen, 2010).

The study

Creative thinking as the co-construction of new understandings and the sharing of alternative perspectives for the design and pursuit of a more sustainable world is acknowledged among the core abilities needed for better grasping the elusive and relativistic character of the concept and for achieving the goals of sustainability (Wals, 2010b). We argue that Constructionism offers an appropriate frame of teaching and learning along this line of thought, by allowing the creation of shared meanings and artefacts and by facilitating discussion and negotiation over alternative conceptual suggestions of sustainability while tinkering with related microworlds.

We therefore designed and implemented a pedagogical intervention with the aim to engage students in creatively designing and constructing a game microworld along with the concept of sustainability. Our approach moves within a constructionist perspective viewing learning as the experiential process of collaboratively generating new or alternative ideas through the active engagement with the construction and de-construction of meaningful digital artefacts with the use of microworlds. In previous studies we have addressed some other parameters of constructionist approaches to teaching and learning about sustainability with game microworlds (see for example Kynigos & Daskolia, 2011; Daskolia, Kynigos & Yiannoutsou, 2012; Daskolia, Yiannoutsou, Xenos & Kynigos, 2012). In this study we focus on the creative potential of learning about sustainability through constructionist activities.

The study context and participants

The study presented in this paper is part of a design-based research which was conducted within *Metafora*, an EU-funded R&D project (<http://www.metafora-project.org>). It took place in a secondary education school located in a central area of Athens and was carried out during the last three months of a school year: it started in early March and lasted until mid June 2012. Overall, 11 two-hour sessions were held on a weekly basis. Eighteen students (9 girls and 9 boys) participated in the study. They were all members of an afternoon Environmental Education Club, a mixed-class group consisting of 7th, 8th and 9th graders. Depending on the activities participants were allocated in groups (of 6) and sub-groups (of 2 to 3 students). All sessions took place at the school's computer lab and each group was assigned to a computer to work on.

The didactic scenario and the tools employed

The students' activity was with an E-slate Microworld Kit we call 'Sus-x', meaning 'Sustainable - x system' (http://etl.ppp.uoa.gr/content/download/eslate_kits.htm). This is a kit allowing the teacher or student user(s) to construct sim-city like games so that players do best when they are sensitive and thoughtful enough about how to ensure or promote sustainability in a particular context (system). A special case of this Microworld Kit addresses 'sustainability in the city', which is why we named it 'Sus-City'.

The Sus-City microworld allows users to create their city background map (by loading, drawing or editing their city image) and place objects on it, the city-sites they want their sustainable city to have. They have also to decide on the 'properties' characterising a sustainable city of way of living in a city, according to which they can 'rate' sustainability (by giving specific values) in all city-sites. A set of default (initial) values, a set of threshold values (indicating when the system's sustainability is violated by the player's choices) and the game play rules (maximum time and number of choices) have to be determined by the users. Game designers can inform players about their game performance by sending them special warning or feedback messages.

Based on the Sus-City microworld kit we designed a 'half-baked microworld' (Kynigos, 2007) to get students started thinking about urban sustainability and sustainable lifestyles. The idea of 'half-baked microworlds' has been suggested and used to describe microworlds which were explicitly designed and mediated to learners as malleable and fallible artefacts given to them to improve (Kynigos, *ibid*). Learners have thus to discuss and negotiate their meanings around how to change microworlds so that they better represent their way of viewing the world. Within this frame the actual end-results of the learners are not what matters more importantly. The importance lies in that their engagement with this kind of joint reverse-engineering aims at individual and collective understandings related to the subject domain itself.





In our study we deliberately called the game microworld we presented to the students to play with 'PerfectVille' (see Figure 1) as it was purposefully designed to project an un-sustainable model of urban living, close to what Lange and Meyer (2009) describe as the "western new middle-class" lifestyle. This is a highly consumerist and hectic way of life embodying the idea of 'the welfare society' as publicized through neo-liberal socio-economic perspectives. Its core elements, high purchasing power to satisfy individual-based needs, the pursuit of social status, high visibility, personal security and high commercialisation of quality of life are thought to be at the roots of most unsustainable practices in modern societies.

The students were given the challenge to play the game, discuss what's wrong with it with respect to the sustainability of the city and then change PerfectVille into their own 'sustainable city' game ('MySusCity'). This task could be carried out by a single student or group of students with the kit alone. However, in the Metafora project we have been developing a system to support learning-to-learn-together activities. The system afforded the students of the study with two more tools which were co-existent and available during their work. One was *Lasad*, a discussion and argumentation space, and the other a *Planning tool* space for the students to collaboratively plan and reflect on their work.

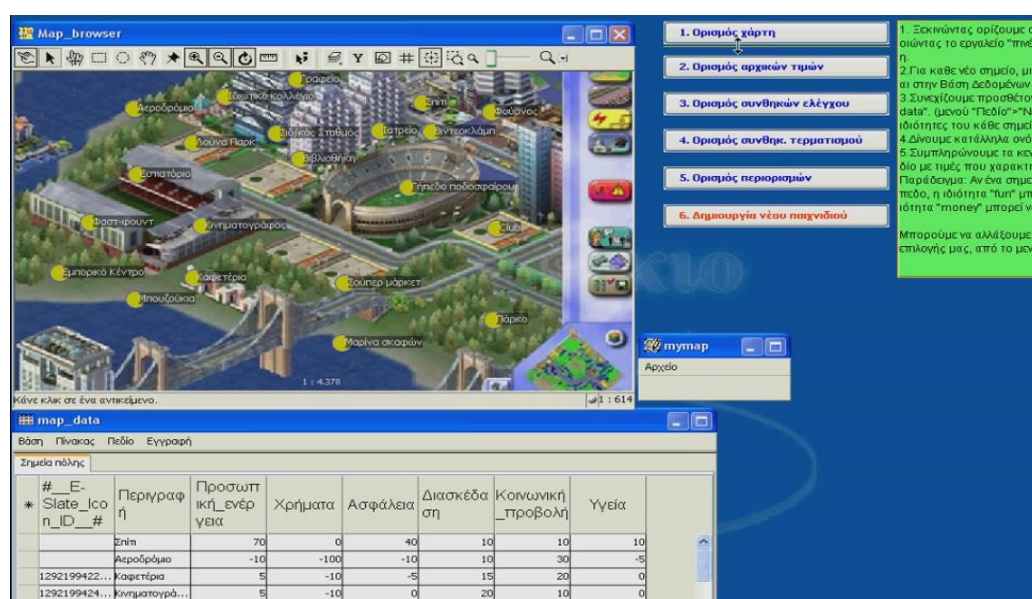


Figure 1. The PerfectVille game microworld

Data collection and analysis

Our analysis was based on the data collected from sessions 8 and 9 of the study. Audio recording and screen capturing software was used to collect information on the students' discursive interactions within their groups while constructing their game, and on the evolution of their digital artifacts. These data were coupled with data from the researchers' observation reports. All recorded data were transcribed.

We used microgenetic analysis (Siegler, 2006) to analyze how new ideas, alternative perspectives and tangible artifacts (the games) were created within the context of the students' discursive constructionist activity and as a response to their interaction with the Sus-City microworld, the challenge set to them and the researchers' interventions in facilitating their learning. The analytical framework we employed to identify and discuss creativity is an adaptation of the categorical scheme suggested by Kampylis and Valtanen (2010). It views creativity (a) as being a function of the individual's and group's ability, (b) as being situated at the nexus of several interconnected processes, (c) as emerging from a facilitative learning context, and (d) as entailing the generation of new/novel abstract ideas and concrete outputs (digital artefacts).

Findings and discussion

This section presents and discusses our findings from the analysis of one case (group of students) consisting of two 13-year girls, Christina and Georgia. We provide an overview of the students' engagement with creatively constructing their knowledge about sustainability and collaboratively constructing their game. In presenting the findings we follow the four-category scheme of our analytical framework.

(a) Creativity as a function of the individual's and group's ability

Although both girls showed an authentic interest in the task set to them and claimed an equal share in the process, their degree of involvement both in generating new ideas and constructing the game was not alike. We view this – at least to some extent – as a function of their personality and as related to their individual creative ability.

Christina has a strong personality, she is eager enough to take initiatives and contribute with fresh ideas. She is very committed to and fastidious about whatever she undertakes. She always claims a leading role in a team. During the task, Christina had a more active and imaginative participation in all stages of the design process, from the selection of the city background to setting the time frame for the game. She was also quite eloquent in expressing her ideas about sustainability and supporting them with arguments.

Georgia, on the other hand, has a milder personality. She is rather timid and usually leaves to the others both the initiative and the final decision to take. During the task she was less talkative in expressing her views and in indicating changes to the microworld. However, she tried to stay involved in almost all decisions related to design issues and to collaborate with her group mate on almost all aspects of their common work. There were moments that Georgia even surpassed herself by claiming with tenor to take control of the mouse so that she had a more direct interaction with the microworld.





Despite the individual differences in personality and creative expression we would say that some kind of complementarity was developed between the two girls with regard to their participation in the constructionist activity. We view this as an effect of the collaborative processes the two girls were involved in, upon which their group or “middle c” (Moran, 2010) creative potential was dynamically built and expressed throughout the task. This is a special case of creative ability which is fostered and revealed in shared group processes towards fulfilling a meaningful goal and characterizes the collective function of individual members.

Creativity as the nexus of several types of processes

Meaning-generation on both the idea of ‘the sustainable city’ and game design was evolved through the students’ active display, exchange and negotiation of their ideas while they were collaboratively working on the game microworld. Actually, SusCity offered a structured agenda for them to collaboratively propose and elaborate on their perspectives with regard to such a complex issue. In their discursive interaction and while ‘tinkering with’ their representations of the sustainable city, the students employed a range of cognitive strategies and communicative patterns to ascribe meaning to sustainability. Our findings indicate that there is a consecutive scalability in the students’ employment of various cognitive and communicative processes that goes along with their interpretation of sustainability. These discursive meaning-making processes seem to be in line with the students’ sequential intervention on changing the various fields of the microworld (background map, city-site objects, properties, values, etc). The selected episodes presented below are indicative of this multiple ‘evolution’ that occurred within the context of the students’ constructivist engagement.

In the first episode the group goes through the first step in constructing their game, which is to set the city background. They review a set of city-images to decide which one is closer to their idea of a more sustainable city. They observe and discern the particular features of each of them. Their argumentation is rather poor and suggestions are put forward without much justification. However, the students propose three basic features of a sustainable city, which are recurrently identified in later phases of their constructionist engagement: open green spaces, physical water recourses and less reliance in automobiles as a means of urban transport.

Christina: How do you like this one? (She shows at image no.9). Do you think it's better?

Georgia: Let's see the next one.

Christina: Wait, there're a lot of green places in this too. (They are still talking about image no.9)

Georgia: Move on...

Christina: Ok...not this one (They look at image no.15).

Georgia: Neither this one (They look at image no.2).

Christina: No...not this one (They look at image no.3).

Georgia: This one (no.6)... It has lakes too. Can you see?

Christina: Yes, but it has a lot of cars, too. Look at this...

Georgia: This city has too many cars too. (They look again at image no.9).

The second episode is taken from a subsequent phase of the students' constructionist activity. It is indicative of how their shared representation of the sustainable city has already started to 'expand'. After they have selected the city-image and changed their game's background map accordingly, the two girls focus on which new city-sites to add and where to put them on the map. This time the students get involved in more elaborated argumentation and negotiation processes over their proposed ideas. They also begin to view urban sustainability not only in terms of a "greener" or "cleaner" environment but as involving several social parameters too, such as the creation of health care services, new job opportunities and community-based organizations. They view all three of them as being in mutual dependence with a "healthier" natural environment. The economic dimension of sustainability also emerges in the students' thought about sustainability, as for example when Georgia casts the idea for an "environmental office" or when Christina suggests adding a "store selling photovoltaic systems" as a business opportunity allowing for profit in the benefit of the environment.

Georgia: We can place the 'health clinic' over here (she points to the city-map). Close to the park.

Christina: Yes! Cause the air is healthier over there... (They move the 'health clinic' closer to the park). What if we put an annex of the 'Scouts' organisation over here? (She points to the city-map)

Georgia: Do you think the others (the other group with whom they collaborate) will agree with this? "What do you think if we add 'Scouts' as a new point on the city-map? It is an association that helps protect the environment?" (She types a chat message to the other group).

Georgia: Let's have an 'environmental office' too.. It's an employment opportunity for the environment.

Christina: Yup, why not? Let's put it here... (She points to a particular place in the city-map).

Christina: Yes...ooh, I got an idea! Let's create a store selling photovoltaic systems. Let's put it here (She points to the map)...It's near the sea.

(b) Creativity as emerging from a facilitating learning context

New ideas and understandings of the sustainability concept and game design emerged as a response to the learning environment created by the microworld and the teachers' role in inciting thinking on it. The following excerpt is indicative of how the teacher's (researcher's) intervention to





initiate further reflection on the meaning of sustainability, by introducing a schematic representation of the sustainability concept, enhanced students' thinking (Christina's in particular) of alternative sustainability opportunities related to the citizens' sense of well-being. The teacher's intention was to provide some scaffolding to the students' thought that would help broaden their perception of sustainability from including just the natural environment. As a result Christina started identifying the 'social' dimension of sustainability in their city too:

R1: Ok girls...Can we have a closer look at this scheme? (She shows them a representation of sustainability as being at the intersection of three circles: 'environment', 'society' and 'economy'). What does it say about sustainability?... The city you designed in your game, does it pay enough attention to supporting a healthy community or a vital economy, apart from focusing only on the natural environment?

Christina: Mmm, the people... they should be happy with their life in this city... There are many facilities adding to their well-being... Such as this pool over there (she points to the map)... There is also a small port over there. People can have many nice walks in this city. They could have some nice boat trips on the river too!

The second expert shows how the glimpse of a new perspective in viewing the city's sustainability strikes Christina as she is prompted by another researcher to review the initial values she had assigned to each of the city-sites. The researcher wanted to help the students develop a better awareness of how their game design choices can shape the players' strategies. By reviewing the 'money' values in various city-sites, Christina realises there is a lot of monetary expenditure involved while 'using' the city. For people to cherish the various goods and services provided by a city, which add to their quality of life, they have "to pay some fare" in exchange. The exception is with some public goods, such as parks. Quality of life is nevertheless very much connected to needs, and thus a highly socially-constructed concept. Such a perspective offers to the students a novel frame of approaching sustainability as a complex and value-laden issue with many interrelated dimensions.

R3: So, in your game, the player has to go to work (select the 'office' city-site) twice to earn more money?

Christina: Yes, in order not to run out of their money resources... Because when visiting most of the city places you spend money. If you go to the 'bakery', you spend money...If you go to the 'supermarket', it is for buying your dairy foods... You go to the 'mall' to buy clothes, etc... To the 'clinic', you have to pay the doctors...To the 'Concert Hall', you have to pay a ticket to watch an opera...To the 'restaurant', you have to pay for the food you are served...To the 'club', you pay for your drinks...To the 'park', you... Oh no, this is one of the few places you don't have to pay anything!

(c) Creativity as the generation of a new artifact and a new conception

Tinkering with the Sus-City microworld to construct a new 'sustainable city' game allowed students to get engaged in meaning-generation processes that led them to a better understanding of the sustainability concept along with the creation of a new artifact. The students made several modifications to PerfectVille in order to construct a new game that would better represent their idea about sustainability. Actually the new game (see Figure 2) offers a more balanced conception of sustainability compared to PerfectVille, which is leaning equally into its environmental, social and economic dimensions. More particularly:

The students altered the city background by selecting and uploading another one. Their representation of a 'sustainable city' has more green areas and other natural elements (such as a lake) intertwined in the city's fabric, less cars and a balanced interplay between more and less densely populated areas. The natural environment seems to be the dominant perspective projected in their conception of sustainability. However, the other two dimensions, economy and society, are also present in the students' discussion about the criteria for choosing this image. For example, the students justified the presence of "some skyscrapers" as indicative of the city's economic prosperity, although they would prefer they were less visible in the image. They also argued that their city offers plenty of opportunities for leading a good life. They thus identified quality of life as one of the sustainability's parameters.

The students deleted four city-sites ('football pitch', 'railway station', 'luna-park', and 'fast-food') as not particularly contributing to the sustainability of their city. They also added eight new city-sites: 'The Scouts', 'environmental office', 'theater', 'the 'photovoltaics store', 'Hospital', 'swimming pool', 'beach', and the 'cycling path', as further enhancing the potential for developing more sustainable lifestyles. Actually, their prime criteria for constructing their sustainable city seem to be how close to their personal zone of experience the city sites are, and with some of them how much there is an obvious 'environmental-enhancing' function in them. Concerns having to do with the social and economic dimensions of sustainability were less explicit although present. The inclusion of various city-sites declares the idea of a city offering a range of opportunities for diverse groups of people to pursue a quality life according to their needs.

Among other modifications the two girls moved city-sites on the map several times so that a better matching between their function and the city image was achieved. They also re-set the default values and individual values in all city-sites with the aim to offer a





more realistic evaluation of each site. Finally, they changed the threshold conditions and game play rules to render the game more challenging and thus more enjoyable for users to play.

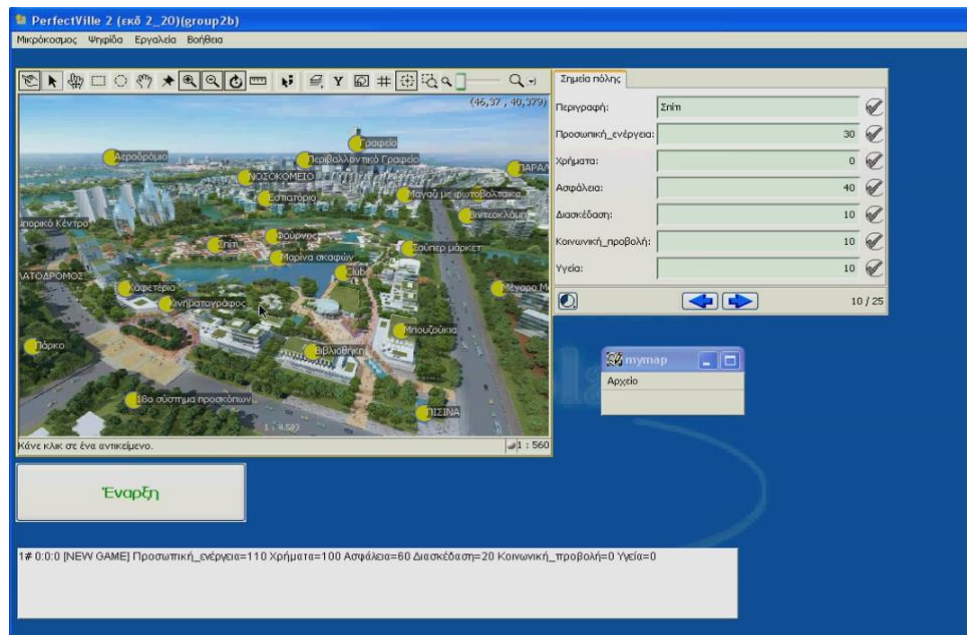


Figure 2. 'MySusCity' game microworld as created by Christina and Georgia

Concluding remarks

The study presented in this paper aimed to identify the creative potential offered by a constructionist approach to teaching and learning about sustainability. A pedagogical intervention was designed to engage Greek High school students in collaboratively re-designing and re-constructing a microworld on the idea of sustainable city. Our focus was on studying whether and how creativity is a situated dimension of constructionist learning arising from the interaction of the students with a microworld and the learning environment. Our findings suggest that the Sus-City microworld empowered the students to collaboratively articulate, display, and elaborate new ideas and to develop and negotiate alternative perspectives with the view to actively interpret a complex and fuzzy concept such as that of sustainability. Actually the microworld offered not only an appropriate learning environment where students could allow their imagination to deploy and construct their game, but also a structured agenda that prompted them to collaboratively think and share their ideas about sustainability. More particularly, the students were challenged by the task set to them, to create their own 'sustainable city' game, and they were aided by the microworld to enter into intentional, shared meaning-making processes that led to the emergence of new understandings and a tangible outcome, their game. Both their discursive interaction over the meaning and features of the sustainable city, their generated ideas and the new game provide evidence of the creative potential of appropriately designed constructionist activities.

Within the context of our study we addressed creativity through a more integrated conception, that is (a) as a function of an individual's and/or group's ability, (b) as being situated at the nexus of several interconnected processes, (c) as occurring within a specific learning environment, and (d) as entailing the generation of new concepts and artefacts. Our proposed analytical framework is supported by the findings of the study. Actually we were aided to identify creativity in many more hidden dimensions of a learning situation than the obvious, and thus to expand the traditional view held by the constructionist community connecting creativity to the generation of digital artefacts only. We argue that this expanded view of the creative potential of learning situations is of particular value for the theory of Constructionism while at the same time it can serve as a useful framework of designing and studying constructionist activities and tools with creativity in mind.

This study gives some insight of how tinkering with a microworld allows students to enter into intentional and participative meaning-making processes that lead to the emergence of new ideas and understandings about difficult concepts, such as that of sustainability. This is of particular importance for EE and ESD that are in a constant search for new theoretical approaches and tools to support learning about the complex and multifaceted nature of environmental and sustainability issues in more meaningful ways. Although preliminary empirical evidence is promising, more future research is needed as to whether and how constructionist pedagogical designs can offer appropriate modes and tools for learning about these issues. Moreover, extending constructionist frames of epistemology and learning beyond its traditional subject domains of application, such as mathematics, science and computers education, to social sciences, humanities and the arts is a major challenge yet to be undertaken. This is particularly true for educational domains that promote interdisciplinary, systemic and critical knowledge about complex concepts and issues related to contemporary realities such as those dealt within the context of EE and ESD.

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Sound: exchange, analysis and emotions.

Filling the gap between rural and urban areas: a proposal.

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ABSTRACT

Listening to sound, being it musical or naturalistic has a great evocative power on our emotions. In urban habitats, natural sounds are not salient to dwellers. Here information from the specialized field of bioacoustics will be transferred as regards as available free-ware software for sound analysis and recording techniques, and experienced psychological techniques such as acoustic maps, and sound natural listening will be proposed. Sound exchange between the urban and rural areas is an interesting experience for linking distant acoustic worlds.

Introduction

Listening to sound, being it musical or naturalistic has a great evocative power on our emotions and internal images (Murray Schafer 1977, Oba, 1994, Sogabe & Oba 2001). Though natural sounds have been proved to promote strong positive effects on people' moods and affect, human-hood is losing the soundscape, even at a faster rate than the landscape, and this loss is even more unnoticed than than the one of landscape, of which we may have paintings or photographs. In the middle of a forest, or on the highest mountain, where no man made artefacts can be seen, the sound of mechanical artefacts such as cars, aircrafts, motorbikes can join us. In urban habitats, natural sounds are not salient to dwellers, and attention to natural sounds both biotic (birds, insects) or abiotic (streams, wind, sea-waves) is less salient to urban people (Lenti Boero 2010). One aim of environmental education as well as conservation psychology should be to improve the awareness towards the soundscape. In fact, humans are visually oriented and sounds are perceived as "attach" to visual scenes, thus, raising the attention regarding sounds from the natural environment, both biotic and abiotic is of primary importance for sound preservation. Here some simple technique are presented and information from the specialized field of bioacoustics as regards as available free-ware software for sound analysis and recording techniques, are given.

Some of those activities could be carried in the field, and others in the classroom.

Field techniques.

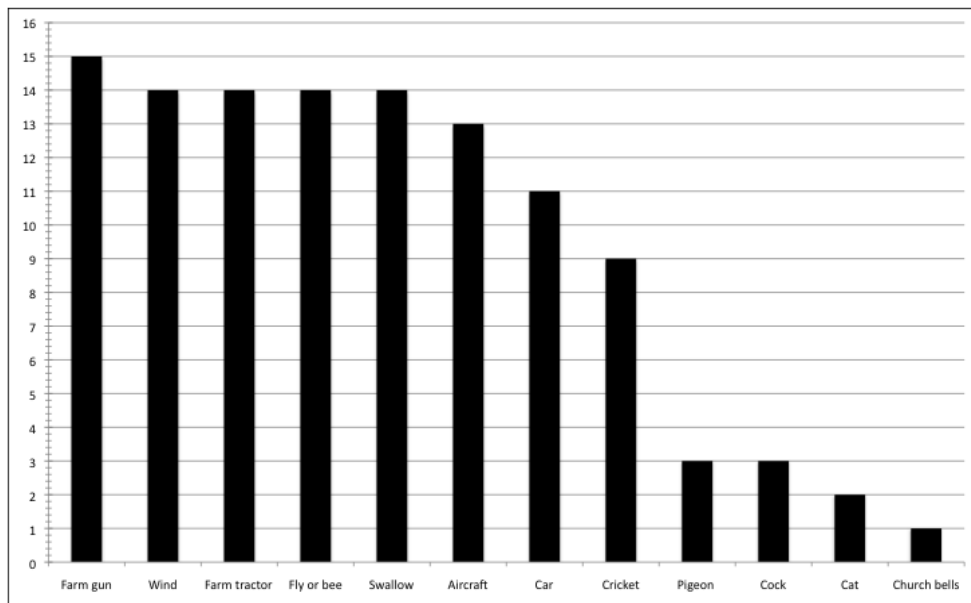
Sound mapping.

Sound mapping is a very important part of sensorial exploration of the environment, that is crucial for building an emotional relationship. Students of any age classes (see fig. 1, 2 and 4) are taken in a natural environment and asked to close their eyes and listen to surrounding sounds (streams, air, birds, and any other sound) for 5min. Then, they describe the sensations induced by those sounds and eventually draw graphic maps representing the sounds listened to, in accord to what suggested by Oba (1999). In fig. 1a and 1b some maps collected from 15 primary school children of both sex around the small town of Urbino, Italy, are presented. As well as results in graf. 1. As can be seen, although all children listened to the same soundscape, they did not pay the same attention to all sounds.



Fig.1a. and fig. 1b.





Graf. 1

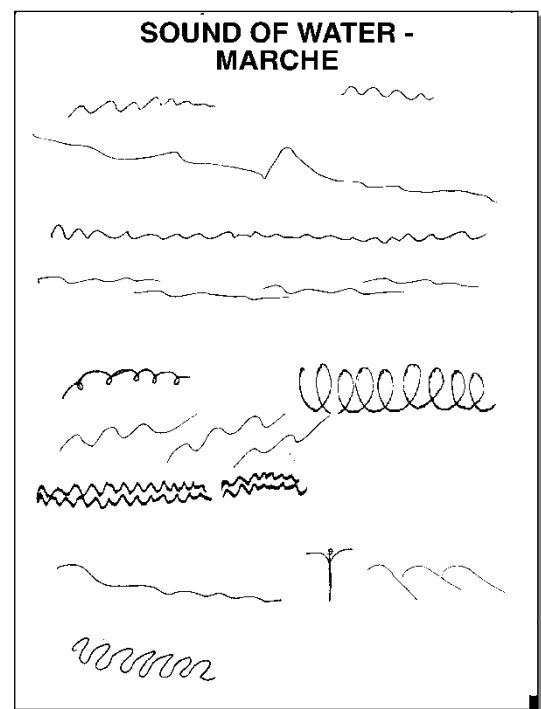
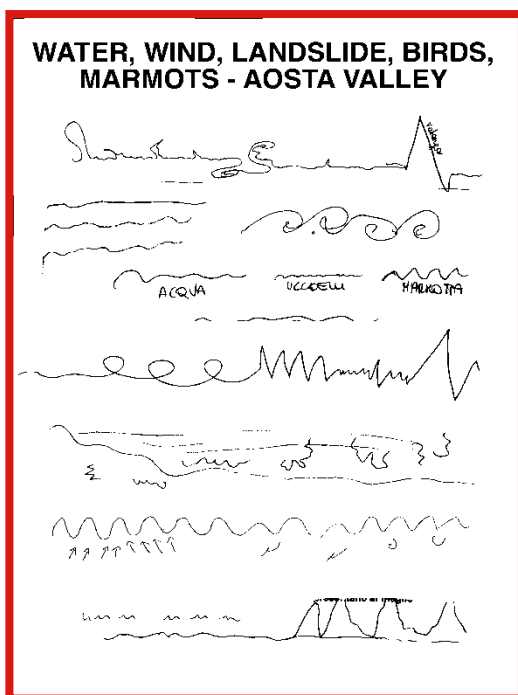


Fig. 2a. Collage of mountain soundscape including landslide (valanga), water, and marmot University students (age 20/25).

Fig. 2b Collage of graphics for sound of water.

Alternatively, you may include sound drawing within a more complex sheet, asking other aspects of sound. In fig. 2a some drawings from students from Aosta University (15) taken asked to listen to the sound of streams, air, birds, and any other sounds for 5min. after a trip in a mountain environment. As can be seen, graphics is similar to fig. 1a and 1b above,

independently on age. You may also specialize on single specific sounds: i.e. water, as in fig. 2b below, drawn by university student from Urbino University, Marche, Italy (age 20/25).

Classroom techniques.

Going outside with classes is sometimes difficult. What do we can do inside the classroom?

You may work with files recorded on your own, may be during previous experiments, or with your mobile, or with digital sound recorder; alternatively, you may download audio files from the many audiolibrary of natural sounds available in the internet. Among the others my best choice is: <http://www.macaulaylibrary.org/> . “The Macaulay Library is the world's largest and oldest **scientific archive of biodiversity audio and video** recordings. Our mission is to collect and preserve recordings of each species' behavior and natural history, to facilitate the ability of others to collect and preserve such recordings, and to actively promote the use of these recordings for diverse purposes spanning scientific research, education, conservation, and the arts. Scientists worldwide use our audio and video recordings to better understand and preserve our planet. Teachers use our sounds, videos, and curricula to illustrate the natural world and create exciting interactive learning opportunities. We help others depict nature accurately and bring the wonders of animal behaviour to the widest possible audience. It is an invaluable resource at your fingertips”.

Once the sounds chosen, it is possible to devise many interesting small experiments, reminding that, from our ancestral heritage, some natural sounds make us happy and cheerful, others make us scared, or sad (Lenti Boero & Bottoni 2008). Here below some results are presented from a pilot experiment on mixed age subjects (n. = 24, age 10-63), recruited at the scientific event “Notte della ricerca” in Aosta, Italy in 2008. Subjects were asked to listen to some audio files played from Ipod with Irhythm loudspeakers, then they were asked to fill a questionnaire. Results from contrasts of two sounds: gibbon's duets and chaffinch's songs are presented below. Subjects were first asked to use words for defining the sounds heard. In tab. 1, semantic definitions given by subjects were grouped in two separate lots having positive and negative denotation.





Tab. 1	Semantic definition for sounds				
	harsh/ aggressive	%	warm/ sweet	%	total
gibbon's duets	17	77%	5	23	22
chaffinch	2	8%	22	92%	24

Tab. 2. Aesthetic quality				
	mean score	SD	F	P
gibbon's duets	6.07	2.15	17.95 _{1,24}	0.000
chaffinch	8.32	1.35		
no difference for sex			0.735 _{1,24}	0.4

In Tab. 2, mean scores and F tests for aesthetic quality are presented. Subjects were asked to rate with scores from 1 (lowest) to 10 (higher) the perceived aesthetic quality of sounds.

Tab. 3. Cheerfulness/sadness				
	mean score	SD	F	P
gibbon's duets	1.08	1.24	10.5 _{1,22}	0.004
chaffinch	1.83	1.25		

Tab. 4. Serenity/anxiety				
	mean score	SD	F	P
gibbon's duets	1.24	1.38	1.22 _{1,21}	0.281
chaffinch	1.85	1.19		

In tab. 3 and 4. Results from two Likert scales are presented: both cheerfulness/sadness and serenity/anxiety were rated from +3 (very much), +2 (much), +1 (little) to the mirror negative -1 (more or less), -2 (not so much), -3 (not at all).

Conclusions.

Sound as a topic is an interesting model for environmental education in all age classes because it links a scientific/disciplinary approach involving physics – learning about sound waves –, biology – learning about animal sounds-, drawing – graphically describing listened sounds on paper (Sogabe & Oba 2001), to the necessary evocative and emotional

one, induced by sound listening both in the environment and at school, that is the ground of any educational process (Lenti Boero 2004, Lenti Boero et al. 2009).

Due to the evocative power of sound, exchange between urban and rural sounds performed by students, could be a very interesting experiment in order to compare specific soundscapes in the surrounding domain of scholars.

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Un Dadaïsme au service de l'environnement

L'art, outil d'éducation environnementale

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Résumé

En 1916, le Dadaïsme naquit en Europe remettant en cause toutes les convenances idéologiques. Le jeu avec l'humour, la créativité, l'extravagance ou la dérision ciblait une liberté de langage sous toutes ses formes. Ainsi, au lendemain de la 1ère guerre mondiale, L'art a fait sa révolution pour contrer le chaos et panser les esprits, action qu'il devrait ré-entreprendre aujourd'hui suite à la guerre destructrice menée contre la nature.

L'art comme langage universel pour réveiller les esprits brouillés et outil éducatif peut favoriser la compréhension et le respect de l'environnement.

Introduction

A la fin des années 20 du 20ème siècle, un mouvement artistique et intellectuel nommé «dadaïsme» naquit en Europe remettant en cause toutes les convenances et contraintes idéologiques. Le mépris était manifeste envers les préceptes qui perduraient et le jeu avec l'humour, la créativité, l'extravagance ou la dérision n'avait en dessein que la recherche d'une liberté de langage sous toutes ses formes.

Ainsi, si par le **chaos** qui régnait au lendemain de la première guerre mondiale l'art a fait sa révolution pour dédramatiser et panser les esprits, n'est-il pas nécessaire aujourd'hui, suite à cette guerre destructrice que l'Homme mène contre la **nature**, que l'art entreprenne une révolution pour réveiller les esprits brouillés. Qui peut nier que l'esprit de l'Homme n'est point brouillé par la recherche vorace du gain au mépris de l'**environnement** ? Qui peut nier que l'homme a assez exploité les **ressources** naturelles et que la perspective de pénurie est imminente ? Qui peut démentir que la croissance galopante de l'**urbanisation** n'a pas que du bon et que la limite entre le rural et l'urbain prend des formes irrégulières ? Qui peut dénigrer l'impact des **changements climatiques** sur l'environnement de l'homme et tout simplement sur son avenir ?

La sonnette d'alarme est titrée depuis déjà un moment, ce qui a engendré une prise de conscience collective par les institutions étatiques, les ONGs ainsi que les organismes internationaux qui se déploient pour essayer de réveiller les consciences endormies, mais

surtout pour essayer d'apporter des solutions dont la pierre angulaire se résumerait à l'**éducation**. S'il est vrai que les plans de **développement durable** ainsi que les éco politiques et les **économies vertes** sont des outils perspicaces, l'art, en tant que langage de communication universel peut favoriser de nouvelles **compréhensions de l'environnement**, militer pour approche respectueuse des ressources naturelles et une perception équilibrée de l'inéluctable adéquation urbain / rural. Il serait donc utile de pousser la réflexion sur l'utilité de l'art comme moyen de rébellion intellectuelle, littéraire et artistique contre les économies à l'origine d'activités polluantes et énergivores, tout comme le dadaïsme s'est rebellé contre les dictats et les idéologies conventionnelles. L'art en tant que message contre la dictature des économies de marché discriminatoires, contre l'avidité et l'inconscience de l'homme et surtout contre la dissipation de l'éthique et des valeurs essentielles de partage et de communication interculturelle peut donc s'avérer être un outil insoupçonnable de sensibilisation et **d'éducation environnementale**

Définition du Dadaïsme

On appelle Dada le mouvement intellectuel et artistique né à Zurich en 1916, qui s'est étendu à l'Allemagne, la France et aux Etats-Unis.

En tant que mouvement international d'artistes et d'écrivains, il est né d'un intense dégoût envers la guerre qui signait à ses yeux la faillite des civilisations, de la culture et de la raison. Refusant toute contrainte idéologique, morale ou artistique, il prône la confusion, la démoralisation, le doute absolu et dégage les vertus de la spontanéité, de la bonté, de la joie de vivre.



(Tristan Tzara 1896 – 1963)

Il doit son nom à Tzara, qui l'aurait inventé en feuilletant au hasard un dictionnaire.

Dada ou dadaïsme fut beaucoup plus une riposte à une situation historique, sociale et politique qu'à une phase précise de l'histoire de l'art.





Principes et exemples

Les artistes Dadaïstes sont versés dans la contradiction, dans l'anti-conformisme et l'illogisme: ils s'éloignent des règles qui ont toujours gouverné le monde de l'art.

Dénoncer toutes les valeurs de la société telle qu'elle existait avant le conflit: la logique, le sérieux par exemple.

Au niveau de l'expression artistique, la règle est qu'il n'y en a pas : l'art s'exprime à travers n'importe quel matériau, et de n'importe quelle manière en générale, laissant libre cours à la créativité des artistes.

Exemples

Tzara conseille, pour faire un poème, de tirer d'un sac des coupures de journaux et de les copier dans l'ordre de leur apparition.

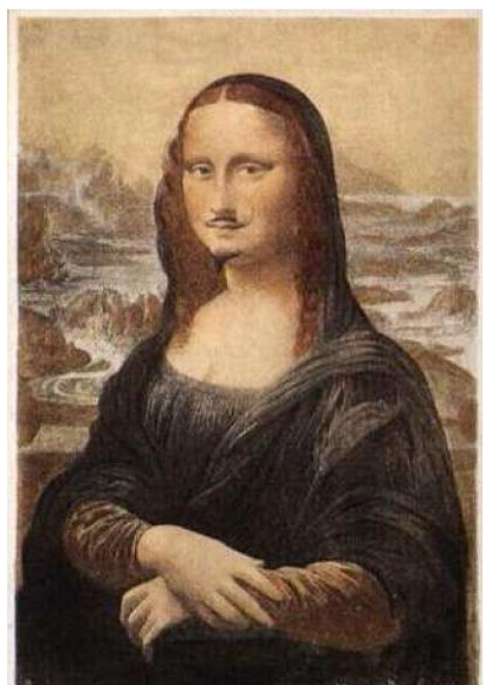
« Ecrivez vite sans sujet préconçu, assez vite pour ne pas retenir et ne pas être tenté de vous relire. »

André Breton

Extrait du Manifeste du surréalisme.



Alfred Stieglitz, photographie de la
Fontaine de Marcel Duchamp (1917)



Marcel DUCHAMP,

Un calligramme est un poème, une phrase ou même un seul mot où la disposition de son texte forme une image qui est généralement en rapport avec le sujet du texte.



Suite au **chao** qui régnait au lendemain de la première guerre mondiale, l'art a fait sa révolution pour dédramatiser ce chao et panser les esprits.



moyen de rébellion intellectuelle, littéraire et artistique contre les pratiques polluantes et énergivores, tout comme le Dadaïsme s'est rebellé contre les dictats et les idéologies conventionnelles.

Pratiques d'ici et d'ailleurs

Les actions de la Fondation Mohammed VI pour la Protection de l'Environnement sous la présidence effective de Son Altesse Royale La Princesse Lalla Hasnaa qui visent :

- L'implication les acteurs (ONG, sponsors, collectivités, administrations publiques)
- La création d'un mouvement de mobilisation de toutes les strates de la Société
- L'Education des plus jeunes
- L'exposition « La Terre vue du Ciel », par Yann Arthus-Bertrand. En 2009 des d'oeuvres qui interpellent l'opinion publique et nous invitent à promouvoir un changement de comportement.



Flamants roses sur le lac Nakuru, Kenya



Éléphants dans le parc de Meru, Kenya

Hommage à la journée de l'environnement avec une exposition à l'air libre sur la corniche de Casablanca intitulée «Les pyramides de l'environnement». L'artiste peintre Abderrahmane Ouardane entend faire réagir le public contre la pollution et les inciter au respect de l'environnement. Son oeuvre est représentée avec ses trois faces. Chacune symbolise les trois éléments indispensables à l'environnement: la terre, l'eau et l'énergie.



ouradane.ma





L'Association « Pour Un Maroc Vert » qui a fait appel en mai 2009 dans le Cadre du «Festival Africain sur l'écologie et le Développement Durable à une mobilisation de tous les artistes marocains afin de manifester à travers leur force créative, leur intérêt et leur soutien pour un Maroc vert Par la force créative de l'Art» en visant de :

- Accroître les pratiques artistiques et responsabiliser la population, particulièrement celles des enfants et des jeunes.
- Organiser des Workshops et séminaires d'information et de formation.
- Participer aux diverses activités et manifestations culturelles, artistiques et sociales, locales, nationales et internationales.



Crédit photos site officiel

Pratiques d'ici et d'ailleurs

Le Prix Coal Art & Environnement, créé par l'association Coal (la coalition art et développement durable) récompense chaque année un artiste contemporain impliqué sur les questions environnementales. Il présente chaque année dix projets d'artistes plasticiens impliqués sur les questions environnementales, sélectionnés dans le cadre d'un appel à projets international.

L'objectif du Prix Coal Art & Environnement est d'inciter les artistes contemporains à s'emparer des grands enjeux sociétaux et environnementaux et de participer à l'émergence d'une nouvelle culture de l'écologie. Les critères de sélection des projets, prennent en compte :

- La valeur artistique, la pertinence (compréhension des enjeux),
- L'originalité (capacité à proposer des approches, des thématiques ou angles de vues inédits),
- La pédagogie (capacité à faire passer un message, à sensibiliser),
- La démarche sociale et participative (engagement, témoignage, efficience, dynamique sociétal), l'éco-conception et la faisabilité.

Prix 2012

La *Banque de Reines* propose une oeuvre habitée d'abeilles au coeur de la ville, gérée par les apiculteurs, qui serait à la fois un centre de pollinisation urbain et un centre d'élevage de reines pour repeupler les ruches des campagnes. Avec ce projet, Olivier Darné questionne la spéculation sur les valeurs, le partage des richesses et la disparition des ressources, en mettant l'abeille, dont l'existence est vitale pour l'espèce humaine, au coeur du processus.



Source : www.projetcoal.org





Source : www.projetcoal.org

Prix 2011

Stefan Shankland recevait le Prix COAL Art & Environnement 2011 pour son projet *Marbre d'ici* qui croise des enjeux artistiques, urbanistiques et environnementaux. L'équipe du projet s'implique dans la conception et la production des futurs espaces publics de la ZAC. L'objectif est de créer un nouveau matériau composite (le *Marbre d'ici*) réalisé à partir de gravats provenant des chantiers de la ZAC : une matière première locale, porteuse de l'histoire d'un quartier, valorisée au travers d'un processus artistique.

MARBRE D'ICI

pour une nouvelle matière première locale portant la mémoire d'un processus



Source : www.projetcoal.org

Blueland

La société Blueland est une plateforme de création artistique engagée dans le développement durable par l'expression du Land Art et de la conjugaison entre Art et Nature. Elle représente et développe le travail d'une trentaine d'artistes français, reconnus et émergents, du mouvement de l'Art Environnemental.



Catherine Baas _ Les sentiers du Rhône



Aligna Sadakhom - Bouteilles en fleur





La fondation good planet

Reconnue d'utilité publique, elle est présidée par Yann Arthus-Bertrand qui à travers ses photographies, invite chacun à réfléchir à l'évolution de notre planète et au devenir de ses habitants. Depuis 1990, Yann Arthus-Bertrand a survolé une centaine de pays. Ses photographies, invitent chacun à réfléchir sur l'évolution de notre planète et au devenir de ses habitants.



THON ROUGE DE L'ATLANTIQUE PRIS DANS UN FILET DE CAGE D'ENGRAISSEMENT, MER MEDITERRANEE, ESPAGNE.



GOBIE JAUNE A LA FENETRE DE SON ABRI (UNE CANNETTE DE SODA), PENINSULE D'IZU, HONSHU, JAPON.

Street art

Comme au sein du mouvement anarchiste, il existe plusieurs courants de pensée parmi les artistes de *street art*. Ces initiatives individuelles tentent de restaurer un lien social, en passant par l'émotion. Les productions contestataires destinées aux murs de la ville révèlent non seulement le point de vue humaniste des émetteurs mais aussi la « manière dont [ils] considèrent les lecteurs et lectrices et l'état de la conscience sociale et politique des individus ».



Graff de Banksy sur le mur de Bethléem, 2005





Le trash art



Tim Noble projected-art-from-trash

Environnemental Art



Artiste: Jouna Pohjalainen (2009)



Artiste: Pertti Saari (2007)

Propositions

L'art dans sa diversité est capable de promouvoir une vision d'un environnement sain, en véhiculant les valeurs de l'écocitoyenneté à travers le souffle innovateur et esthétique de l'artiste

- Organiser un concours de la photographie de la nature à l'échelle nationale qui met en valeur le patrimoine environnemental national.
- Encourager la création et la prolifération des galeries d'Art de Recyclage.
- Aménager au sein de chaque ville un quartier d'exposition permanente de l'Art Environnemental qui permet la promenade et l'interpellation des passants.
- La création et l'implication des amicales de quartier pour le développement du Street Art sous le thème du respect de l'environnement.





The sustainable fish performance

The role of theater in communicating complex environmental message to children

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Onda Teatro

Abstract

Sustainability is a very common word today. Despite its popularity, it is a surprisingly complex concept. Environmental education faces the challenge of helping children to understand sustainability. Fostering imagination, rational and emotional understanding and fun, theater can support environmental educators in this purpose. This work describes the process that led to the creation of a theater performance for children on the topic of sustainable fish consumption. The results demonstrate the positive role of theater in communicating complex environmental messages to children.

Introduction

“All forms of performance are about retrieving the past, designing the future, and questioning the present.” (Morteo, 1994, p. 113)

This work describes the process that led to the designing and performance of the theatre show *Sano come un pesce*¹ and, by analysing this experience, it investigates the ability of theatre for children to communicate complex concepts to its audience, through an educational process in which the show is an artistic synthesis of various topics, at times even contradicting one another, and the starting point of a process of reflection which will support children in their behaviour and decisions.

¹ *Sano come un pesce* (the English translation is “Healthy as a fish”, but in Italian the title means “Fit as a fiddle”. The most suitable English title could be “Plenty more fish in the sea”) is a play by Onda Teatro, a theatre company from Turin and one of the most important in Italy for what concerns theatre for children. Created as part of the Sanpei research project, this Onda Teatro-National Research Council of Italy co-production was first used as a tool to educate the children involved in the project to the sustainable consumption of fish. After its première in Rome on 11-12 May 2012, it became a theatre event of its own, independent of the research project. It is still being performed, with great success, to audiences of all ages.

The show originated from the coming together of researchers and people working in the theatre, and the first reaction was of great interest and mutual curiosity.

The researchers needed to design an educational action targeting the children involved in the Sanpei research project with the purpose of encouraging them to eat innovative fish products, which they were not used to, during school meals. This could be achieved thanks to new knowledge and a positive perception of fish, as well as greater awareness of the limited resources available in the sea today, of the fact that the current fishing methods are no longer sustainable, of the presence of alternatives (such as organic aquaculture), and of each individual's responsibility in choosing what to eat. Hence, the intention was to educate children to eat fish not indiscriminately but by paying attention to the consequences of doing so, i.e. in a *sustainable* way. The message was: "children, eat fish, but not of all types; for instance, choose fish from organic aquaculture because it is more respectful of the environment". Obviously, this is a complex and sensitive message, which can lead children to raise objections. For example, they might say that to protect the environment it would be better not to eat any fish at all! Therefore, it is important to suggest the idea of *compromise*, which underlies the very concept of sustainability, understood as the best possible compromise among environmental, social, and economic needs at a given historical moment, determined on the basis of the scientific and technological knowledge possessed at that time. "Sustainability is an example of what is called a 'wicked problem'. Wicked problems are complex and messy, characterized by several features: non definitive formulation of the problem exists; its solution is not true or false, but rather better or worse; stakeholders have radically different frames of reference concerning the problem; constraints and resources for solution change over time; and, the problem is never solved." (Peterson, 2009, p. 71)

How to convey such a complex message to children was the aspect which worried the researchers the most, as they are used to methods for the circulation of ideas among peers, expressed through technical and sector-specific language. Entrusting a theatre company with finding a solution thanks to its creative abilities was not only a relief but also an exciting opportunity to investigate said creative process, which can use its educational message to stir thoughts, emotions, and enjoyment.

The theatre company was pleasantly surprised to meet researchers interested in *unorthodox* methods of communication, rarely adopted in scientific dissemination. Above all, this was a stimulating opportunity to create a play that would be, at the same time, an





educational tool for the research project and an independent theatre show for all kinds of audiences. For this reason, the theatre company had to endorse the content of the message to be conveyed to the children and embrace it as its own, making it universal. This preliminary endorsement – which comes before the creative process leading to the story and its artistic production – is necessary also because the company has to be effective and credible. In a play on commission – not originating from the theatre company and its need to tell a story but from the needs of an external party –, the issues of credibility and effectiveness are extremely relevant. Theatre communication, especially when aimed at children, is based on the performers' ability to involve the audience and persuade it to follow them throughout the narration, without asking questions, putting up obstacles, and asking for explanations. These can come at a later moment, when the show is over. It is true that an actor must be able to play any role, without necessarily siding with the character played. However, it is also true that in our case the purpose was not simply to play preset characters or bring an already existing script to the stage, but rather to tell a convincing story based on relevant issues, using words, gestures, and the relationships created on stage, as well as the music and lights, to explain a line of reasoning or highlight key concepts. Depending on how this *system of meanings* is acted on the stage, the content can shift one way or the other.

Thus, creating the show *Sano come un pesce* required the theatre company to clarify the content of the story, understand within which boundaries it should develop, and clearly identify *what* to tell before deciding *how* to tell it, answering the questions that every director must ask: "Why this play, why now?".

This paper describes the process of creation and evolution of the play from both points of view, that of research and that of theatre.

The first part summarises the characteristics of children's theatre, its advantages and limitations in comparison to other means of communication used in educational programmes for children and its role in Environmental Education (EE). Then, the objectives of the show are illustrated along with the way in which the theatre company works. The phases of the process leading to the creation of the play are described. In the concluding section, a review of the whole experience is presented, together with an assessment of its success and potential to be replicated in similar situations, i.e. when complex messages need to be conveyed to children.

The collaboration between the world of research and that of theatre was demanding, not only because the common objective was extremely complex but also because the ways in

which the two professional sectors operate and communicate are rather different. Therefore, the results of this experience are extremely valuable, since they offer useful indications to those who wish to take on a similar challenge in the sectors of scientific dissemination and children's EE.

Why a theatre show?

The choice of a theatre show as a tool to communicate complex concepts to children was due to the specific characteristics of this form of artistic expression, which is extremely powerful and effective. In comparison to other methods of communication used in educational initiatives aimed at children and teenagers, theatre has several advantages, as well as limitations which must be taken into account.

Usually, educational projects focusing on children adopt means of communication that can easily reach a wide audience, such as written media, the Internet, television, or cinema. The emphasis is on circulation, the amount of individuals that can be reached with one action, fast reproduction, and ease of use of the communication method, in order to achieve the best ratio between costs and benefits of the educational action.

From this point of view, theatre has some limitations. It is slow, because it implies a growth process that requires time, before and after the première. Its target audience can only be reached in a *live* situation, in a well-defined space, and at a precise moment. However big, a theatre venue holds a limited number of spectators. This is why theatre cannot reach a very large number of spectators in one show, differently from the Internet, television, and cinema. Lastly, differently from other means of communication, a theatre show cannot be reproduced in a perfectly identical way every performance.

“The theatre is an *artistic action* rather than an *artistic product*. As it is an action, it is valid at a given time, in a given place, in a given situation, in relation to given actors and their given audience.” (Morteo, 1994, p. 15)

However, its non-identical replication makes each performance different from the next, creating a unique and non-repeatable educational experience for the young audiences involved.

Through a theatre show, the educational action implemented is pervasive and occurring at the local level, thus allowing for direct interaction with the audience. Furthermore, a theatre show helps different children come together, since its spectators are from various classes of the same school or from different schools. This allows the schools involved to expose





children of different ages to the topics addressed and to develop a common educational experience with slight differences depending on the age of the pupils.

Within an educational project, theatre can provide different levels of intervention, addressing either a target group (a class, a group of classes, a set of children participating in summer camps) or a much larger and diversified audience (when the performance takes place at school or in a theatre). Training labs, theatre games (dramatisations in which the audience is actively involved), stage readings, and fully-fledged shows are the modular educational tools which theatre can bring into play.

Theatre for children and teenagers is characterised not only by a specific target audience but, above all, by its specific artistic and educational design, which focuses on the language and methods typical of childhood and adolescence. Educational objectives are a key feature of this kind of theatre, which has strong links with the school environment, not only because it reaches its target audience through the school institutions or families but also because it is an opportunity for schools to initiate educational actions (for a brief overview of the relationship between theatre and schools, see Bonora, A. and Guccini, G., 2000).

Theatre is an experience which involves body (the senses), mind, and heart (emotions and relationships). This is why it can be a formidable tool to raise awareness, as it deeply influences its audience, driving the children towards pondering the matter at hand, asking questions, and trying to find answers.

The educational value of theatre performances involving children and teenagers and watched in the form of shows is extremely important, since they are based on the idea of a game but are able to promote creative processes that can change single individuals as well as groups. According to Rostagno (1980, p. 342), "The dramatisation game is not a prearranged event, it is a form of expression of the children as a group, it is based on a one-off opportunity, and it activates a wide range of languages (sound, pictures, gestures, miming, verbal communication, and others) which are structured in expression modules".

If the "underlying objective of the dramatisation game" is to "give back to the children their freedom of expression as a primary and necessary form of communication and relation among humans" (Bernardi, 2005, p. 44), then theatre possesses the greatest educational power.

A theatre lab is, by its very nature, a place where to explore oneself, the surrounding environment, and one's relationships with others. Within a protected environment (that of

the lab), theatre allows individuals to experience life and, at the same time, develop their creativity.

The key elements a theatre show focuses on are attaching importance to group dynamics and relations, developing the ability to listen, highlighting the educational value of playing, and paying great attention to an individual's body, voice, gestures, and actions.

Watching a theatre show allows the audience to actively participate in the theatre *event*, i.e. a ritual act held in a set place and at a time removed from daily life. These characteristics allow children and teenagers to experience a magic moment, separate from but also deeply linked to their lives. The audience takes part in the ritual of the theatre event by re-elaborating a personal and, at the same time, collective point of view on what it has experienced.

At the end of the performance, the actors speak to their young audience, exchange ideas, answer their questions, and explore their perception of what happened on stage, thus continuing to communicate beyond the limits of the stage and turning the children and teenagers into the main characters of the on-stage event.

In an essential book to understand theatre for and with children and teenagers, Emanuele Luzzati, a theatre performance designer, and Tonino Conte, a playwright and director, provide a simple yet exhaustive interpretation of the matter: "In theatre, which is much closer to craftsmanship, constant exchanges of ideas and discussions are indispensable elements for a good final product. A theatre show grows and lives organically, like a plant, it is sensitive to the environment and to the moods of the various members of the group, and it can keep changing as it evolves. This growth does not stop on the day of the *première*, but it can continue until the last performance. Each show is an event which is never repeated in exactly the same form. The director might change his/her mind, realise that there is a mistake, or modify the setup of a scene at any time after the *première*. It often happens that certain scenes must be removed if they prove to be superfluous or boring when they first stand the test of the audience. [...] But the element which undergoes the most radical transformation is acting. Actors absolutely need feedback from the audience to put their role into focus, they must experience its reaction to measure effects and find the right pauses. The show breathes with its audience, finds its pace together with it. After all, it is the audience itself that puts the finishing touches to the direction." (Luzzatti and Conte, 1977, p. 11)





Theatre and environmental education

The topic addressed by the play was supposed to be the exploitation of fish resources. Fish supply chain is one of the most critical in terms of sustainability. The current situation is as follows: fish consumption is increasing, whereas the natural fish stocks – especially of the most commonly eaten varieties, such as cod, sole, and tuna – are decreasing due to overfishing. Several fishing gears and methods, as well as pollution coming from various sources, destroy the marine ecosystem. Aquaculture, which might represent an alternative to intensive fishing, has not yet overcome one of its greatest criticalities, i.e. the fact that farmed fish is fed large quantities of fished fish (the so-called forage fish). Many actors with contrasting interests are involved in this production sector: fishermen, fish industries, consumers, and environmental activists, just to mention a few. The above would provide children with a framework that raises their awareness of an environmental problem. They might feel involved in contributing to its solution, but they would be able to do so only in the future, when they are adults. However, if children are seen as consumers of fish (as they actually are, at least once or twice a week when they eat fish in school canteens) and as individuals generating large quantities of fish leftovers (since fish is one of the most wasted foods in school canteens), the circumstances described above turn into a scenario in which children can play a crucial role and change the situation through their consumption of fish. This brief overview is a typical example of the complex problem of how to manage shared natural resources, also known as the *resource dilemma* (Ostrom, 1990). For what concerns environmental dilemmas theatre can create condition under which stakeholder can *step into the shoes of others*. By bringing together characters with different opinions and by combining real, imaginary, comical, and paradoxical situations, a theatre show encourages critical thinking and creates an environment in which to explore the point of view of others. Hence, theatre facilitates learning, which occurs when individuals not only gain new knowledge but also become aware of their role within a complex system of actions and interactions, in which a compromise must be reached between the opposing needs of profit and sustainability.

Nature has always been a core topic in the work of playwrights and, on stage, natural environments turn into dramatic forces. According to Downing Cless (2010), looking at the history of the Western European drama, through Sophocles, Aristophanes, Menander, Marlowe, Shakespeare, Ibsen, Chekhov, Brecht, and others, it appears clearly how theatre has always participated in the complex and multifaceted human/nature relationship.

Theatre, he writes, “deeply connects nature back to humanity, because it can combine all of Félix Guattari’s ‘three ecologies’ – mental, social, and natural”.

At the same time, many authors (Munk, 1994; Chaudhuri, 1994; Giannachi and Stewart, 2005; May, 2006) observe that the playwrights’ silence on the environment as a political issue and the critics’ neglect of the ecological implications of theatrical form are rather astonishing.

The opportunity as well the urgency of performances that help society recalibrate toward sustainable human means is clear.

Objectives

The initial purpose of producing *Sano come un pesce* was to encourage children to eat *sustainable* fish, in a *responsible* way, in line with the objectives of the Sanpei research project. Nevertheless, the show aimed to be independent of the research project and autonomous, as it told a story that is universal in scope. During its artistic designing, thanks to meetings between the company and its young audience to exchange ideas and discuss the matter, the educational purpose of the show became broader. It no longer focused exclusively on eating sustainable fish, but also on the complex and multi-faceted relationship between mankind and nature, on the place each individual takes within such a fundamental relationship, and on the idea of sustainable development. The new objective was to provide much food for thought and to represent several points of view on sustainability and on how to manage the world, so that children and teenagers would be able to reason about them and make choices. The sea, fish and aquaculture were the starting points to talk about nature, mankind, our world, and our life.

To achieve this, it was necessary to understand if and to what extent the company would be able to share the ideas behind the Sanpei project. This came about thanks to meetings with the researchers as well as with the children and teenagers during preliminary theatre labs and at later stages, when they became directly involved in designing the show. Hence, the company came to share the aims of the project by getting to know those who supported it and those who were its target as well as its protagonists.

By following this method, the actors and producers were able to lead their young audiences to ponder the issues addressed, as they had been in the same position, having to reflect, examine and understand. In particular, it was important to stimulate reasoning





without providing final solutions, but rather suggesting that the sustainable management of our natural resources is a complex and multi-layered topic, implying contradictions and compromises and, above all, requiring some careful thinking and understanding before acting to protect the environment and live better, just as one of the two main characters in the show decides to do, after some reluctance and a long debate with her antagonist. To further clarify how the objective was reached, it might be useful to draw a comparison with cinema. As awareness of environmental issues has increased in the last few years, films for children have often addressed topics similar to those of *Sano come un pesce* (see, for instance, *Seafood* and *Finding Nemo*)². However, due to the peculiarities of cinema, unidirectional in its communication, and due to the need to convey a simple message that can appeal to the general public, films for children are often monolithic, with clear-cut differences between good and bad or right and wrong, so that different points of view are irreconcilable. This stops the viewers from developing any critical sensibility, necessary to form personal ideas and make choices. In relation to this, Luzzati and Conte (1977, p. 9) state: "I sit comfortably in my armchair in front of the television. If I do not like the show, I do not have many means to criticise it. I can have mental reservations and separate the parts that I refuse from the parts that I agree with. I can go as far as to express my disagreement aloud [...]. Yet, my behaviour does not modify the show in the slightest. It keeps broadcasting over my head, while thousands of individuals keep watching it, wholly unaware of my dissent. I cannot communicate with them." Instead, the theatre is a living place, bringing together people who watch the show and people who perform the actions on stage, which helps the former identify with the latter, makes it possible to convey complex concepts, and enhances critical thinking.

Due to its very nature, theatre creates a connection between individuals and the social relationships they have, mankind's deepest nature and the world surrounding us. A body moving on stage in relation to other bodies is a microcosm, a symbol of the macrocosm which we all live in. Augusto Boal (1994, p. 11), the founder of the Theatre of the Oppressed, "started from the unit of measurement of the action and was inspired by the idea of theatre as a small world, which, as such, can show the individual mechanisms of the social world". Following this intuition, *Sano come un pesce* aims to show the mechanisms regulating the relationship between mankind and nature and the different ways in which people deal with this crucial relationship. The issue of sustainable

² *Seafood* is a 2011 Chinese-Malaysian animated film. *Finding Nemo* (2003) is a Pixar animated film which won an Academy Award in 2004 for best animated feature.

management of our natural resources and the relationship between us and our environment is brought to the stage in an attempt to rediscover the deep unity between mankind and nature.

Methodology

The intricate process leading to artistic designing and production can be represented by a circle in which the three main work phases – research, creation, and evaluation – follow and complement one another within a cyclical and continuous process. The research (scientific, pedagogical, and artistic) was the starting point for the other two phases, and it was inspired and enriched by them. The creating and evaluating processes continued for the entire duration of the production, well after the premiere, and were implemented by means of two main activities:

- a. theatre labs with school children;
- b. the performance of the show on stage, checked with the children during open rehearsals and presented first to the students who had previously taken part in the labs and then to a wider audience, including the pupils, their families, their teachers, as well as individuals working in the school canteen service and aquaculture sector.

The show production was developed based on the results of three levels of research.

1. The scientific research concentrated on the issues of environmental sustainability, marine biodiversity, food choices, and the responsible use of the planet's resources by humankind. Continuous discussions with the researchers involved in the Sanpei project, through meetings, exchanges of texts and documents, and the viewing of rehearsals, supported this phase of the study.

- The pedagogical research – carried out through theatre labs with groups of pupils of different ages, coming from different socio-cultural contexts, and with varying degrees of awareness in relation to the topic of the show – made it possible to assess the students' knowledge and reaction to the issues at hand. More specifically, were implemented two labs in Rome with pupils participating in the Sanpei project and three meetings in Turin with children who did not have any specific preparation regarding the topic of the show.

2. The artistic research focusing on theatrical language gave shape to the content, making it possible to express what had emerged during the other two research phases. The choice fell on a type of theatrical language able to create metaphors, images, and stories that would involve the young audiences, captivating them, and providing them with





the appropriate tools to understand the topic at hand and reflect on it. For this type of research, the method of work adopted by the Onda Teatro theatre company was as follows: the two leading actresses and the director elaborated the script of the show starting from the scene itself and using various techniques, such as improvising on specific topics, studying the characters, inventing stories, developing theatrical re-elaborations of texts, and creating stage movements.

Participation and reciprocity. The most important characteristic of the working method adopted was the students' participation. The entire process – from the labs and early improvisation on stage to the creation of the show – was developed together with the students. After studying the material gathered during the theatre lab meetings, a preliminary version of the play was shown to children and teenagers of various ages, coming from primary and middle schools. This was followed by an open debate in which the audience's reactions and ideas were collected. Testing the children's reaction was useful to detect the most suitable approach to make on-stage communication effective. Said constant checks on the form and content of the play were crucial to progress in the creation of the show. When the play took on its final form, it was presented to the students by means of open rehearsals. As young people were the target audience of the show, they were invited to say whether they appreciated the final product and to express any doubts. After that, *Sano come un pesce* was ready to premiere, but the checking process was not over, since at the end of each performance the students were invited to talk to the leading actresses. Hence, the show kept improving from the point of view of theatre communication. This type of production relies on a two-fold elaboration method, continuing throughout the entire experience and involving, on the one hand, the participation of the young audiences and, on the other hand, the creation of the theatre play. The labs and open rehearsals provided plentiful material for discussions and narrations, then re-elaborated and integrated into the artistic production, so that the students watched a show which had come together thanks to their fundamental contribution. Therefore, a process of reciprocity was implemented: the children, stimulated by a concrete task, created images and stories, and the theatre company used them to gather ideas, thoughts, and suggestions, learning from its audience in order to present an effective theatre product dedicated to young people. A virtuous circle was created, i.e. a mechanism by which the theatrical art is brought to the children, transformed and enriched thanks to their participation, and then re-presented to the children themselves.

Results

The project undertaken by Onda Teatro between June 2011 and May 2012 involved a total of around 1,200 students and led to the performance of the show *Sano come un pesce*.

Work process. First exploration phase - summer 2011

In June 2011, during a lab at the “Casa del Teatro Ragazzi e Giovani” in Turin, the theatre company performed Miti Vigliero’s story “La Leggenda delle Acciughe” (1998) to an audience of around forty students aged between six and thirteen. The youngsters were involved in on-stage readings and improvisation, as the starting point for a discussion with the actresses about food and, in particular, about the consumption of fish. They offered various comments which shed light on their perception of fish.

Taste and smell. In general, the children said that they appreciate ready-to-cook frozen fish as well as some more complex and special fish-based dishes: fried fish, pasta with cuttlefish and squid, mussels, clams, scallops, seafood spaghetti, and squid ink spaghetti. Their appreciation of fish depends on how it is cooked and they find the smell of freshly caught or freshly cooked fish pleasant.

Ethical issues concerning the consumption of fish. Some children spoke about their experiences and elaborated thoughts and reflections that illustrate their perception of fish as food and as an animal. They are aware of the issue of animal protection and sensitive to the suffering caused by killing animals to turn them into food.

“Dead fish makes me squeamish because in the Italian culture, before being slaughtered, the animals are stunned and don’t feel pain, but with fish it’s different.”³

“It upsets me when fish die because they feel pain: for example, sponges left to dry in the sun.”

“It would be tough to be smashed against a rock like an octopus.”

“I find it harder to eat fish because it still has its shape on the plate, while if you eat a steak you can’t see the shape of the animal.”

³ The children’s words quoted in the text from now on were taken down by the actresses during the theatre lab meetings, the open rehearsals, and at the end of the performances. They are reported in their original wording. No information about individual children is provided, because the work carried out by the company did not aim to be systematic or to collect the ideas of a statistical sample. Instead, it aimed to describe the children’s reactions, including the less representative but interesting ones, useful for the creative process which, despite being based on the results of scientific, artistic, and pedagogical research, was completely free and subjective, as all forms of artistic production are. Therefore, the children’s words reported in this chapter should be understood as “choral voices”, differently from what happens in social research, where great emphasis is placed on the individual expressing an idea.





Emotionally charged conversations revolved around mankind's supremacy and oppression of other living creatures.

"I feel sorry for the animals because they are defenceless against men."

"When we eat animals, it is as if we were destroying ourselves. It is not natural for humans. We have got everything we want and we must protect animals. The lion and the gazelle, that's a different matter, it's only natural. But we influence our fate: we use methods that we have created but that are beyond our abilities."

At the same time, the children seemed to be willing to accept the pain suffered by animals and to eat them, not only because humans have to eat meat as part of their diet but also because, simply put, meat tastes good.

"If we didn't eat animals, we would suffer: we need those proteins."

"If you feel sorry for them, you should become a vegetarian, but meat tastes good."

"I am sorry if animals have to die, but I eat them."

Fish farming. Some children have negative opinions about fish farming:

"Farming makes you grow attached to an animal; then, you can't eat it."

"Farming still depletes the ecosystem."

"The fish are not at ease because they have been taken away from the sea."

After having been told that some farms follow rules for the safeguard of the environment and the wellbeing of the fish, the children said: "If the farming improves, the animals adapt to it and they improve too". Their active participation in the discussion shows that the youngsters are interested in the topic of food and fish consumption and that the relationship between man and nature touches them deeply at both the emotional and rational level. They were able to formulate complex thoughts, taking several aspects into account: human needs, mankind's oppression of other living creatures, and the balance of the ecosystem. The children's attitude towards fish and their remarks about food led the theatre company to consider new aspects: man's perception of other living creatures, the relationship between humankind and the environment, and eating habits understood as lifestyle. The new issues considered included environmental sustainability, the way in

which humans deplete natural resources, and what will happen to our planet depending on how we treat it. It became clear that the topic of food had to be placed within a wider context and that it was possible to develop an approach which started from food and extended to a *philosophy of the world*.

Second exploration phase - autumn 2011.

The second exploration phase comprised three steps:

1. four theatre lab meetings with school children to assess their knowledge and awareness of, and reactions to, the topic of the show, in order to further develop the company's point of view, enriching it with suggestions and remarks provided directly by the students;
2. the creation by the theatre company of a story for the children to test their reactions and understand how to progress in the development of the show;
3. researching literary, poetry, and scientific texts on the topic.

As for the theatre labs, four meetings were held in total, two in Turin and two in Rome. Three classes participated in the animated reading of legends and nursery rhymes relevant to the issue at hand, and then talked about them with the actresses. One class listened to the story invented during the rehearsals. This was followed by a discussion.

The children's knowledge of fish. The theatre company was interested in finding out how much children know about marine biodiversity. Several types of fish mentioned during the discussion are unusual and, although they do actually exist, they are not normally eaten; rather, the children know about them through the media and other narrative forms.

Environment and pollution. The children proved to be aware of the fact that humankind is responsible for environmental disasters, and they were very sensitive to this matter. "Mankind, humanity, is guilty of destroying the sea"; "oil tankers and fishing ships are responsible for it"; "what bothers me is that fish are decreasing and that they also catch small fish"; "people who throw litter into the sea are also guilty of polluting it"; "I don't like the fact that the sea is polluted, because I can't go swimming and because the fish I eat is also polluted".

Some of the children's remarks were very effective in their simplicity, and they were incorporated into the script directly. The children were also aware of the fact that several





marine species are becoming extinct and they heavily criticised the intensive exploitation of natural resources: “I am sorry that the coral reef is being destroyed because there are many nests there with the fish eggs inside”; “giant turtles are dying because of man”.

Fishing and appreciation of fish. The children were asked “What fish would you go fishing for?” and answered by mentioning the types of fish they like eating, but they emphasised the need to catch only the right amount of fish, to avoid depleting the sea.

Aquaculture. Since the children participated directly in the Sanpei project, they were asked the following questions: “What is aquaculture?” and “In your opinion, what are the differences between fish farming and fishing?”. They provided interesting answers, which took several factors into account and presented two opposing points of view: the children are aware of the positive as well as the negative aspects of aquaculture.

“In the sea, the fish can escape the fishermen thanks to the currents.” “It’s not very nice for the fish to be farmed because, even though they have food, they are trapped and have no way out.” “As soon as they are big enough, they are caught.” “Fish farming is bad because the fish get eaten, but it’s good because, if the sea is polluted, they get to stay in a cleaner place.”

Creation of the show. First stage setting phase.

After completing the pedagogical, scientific, and artistic research carried out before and during the labs and in line with the creative thinking driving the company, the stage setting phase began. Through improvisation, dramatic writing, the creation of characters, and the search for the appropriate language, atmosphere, and mood, the Onda Teatro theatre company started to work on the topic of the show. Theatre makes it possible to deal with complex content and the heterogeneous materials collected during the research phase (the children’s remarks, scientific information, poetry and literary texts) were re-elaborated. The aim was to ensure that viewing the show would be a concrete experience for the children, expanding their horizons in observing and understanding reality, and leading to a shift in their point of view.

The company chose to work along two main, parallel lines, which are the key aspects for interpreting the show. The two actresses play characters that are realistic – two women working in a shop where chairs are restored and sold – and grotesque at the same time. Indeed, at the beginning of the show, it is impossible to understand where the two women

are, and surreal elements come immediately into play, originating from the relationship between the characters, who are very different from each other. One of the two is mainly concerned with taking care of the chairs placed on stage and looking after the small universe represented by the shop. The other one does not care much about the chairs; she is mostly interested in what happens in the world outside and the way in which mankind is spoiling the sea. The two women chat and argue about the topics investigated by the company during the preliminary research phase and take opposing views. This contrast triggers comical, ironic, and paradoxical effects, along with considerations and insightful reasoning. In this way, the children can empathise at times with one and at times with the other character, thus promoting critical thinking and dialectics. The different ways in which the two women deal with everyday life derives from the re-elaboration of the material gathered while working with the students. The children have a complex and multi-faceted opinion on the topic. Like them, the two characters on stage have very different ideas about their relationship with the world. The *drama* (which comes from a Greek word meaning “action”) originates from this, from the interaction between two opposing stances, which enables the theatrical action and the development of dialogues and stage signs. One of the two characters gives voice to the opinion of some of the children (and of many adults), while the other one offers the opposite opinion. This is a device to bring the contradictions found in the children’s views onto the stage. The topics are presented without providing answers, to trigger curiosity, make the audience laugh, and convey emotions revolving around an issue which has to do with the environment and the life of all of us, boys and girls as well as men and women.

The second level of interpretation of the show regards anecdotes which are not part of the main story. In these sections, the two actresses interpret other characters and adopt other approaches to being on stage, thus lending a more surreal tone to the play. They create metaphors, symbols, and poetic images that bring an element of surprise into the narration – mostly revolving around the dialogues between the two restorers in the shop – and give the children the opportunity to have a more visionary and imaginative experience. Once the dialogue between the two actresses resumes, the audience can return to the first dimension.

Second stage setting phase

The second and last stage setting phase, which ended with the premiere of the show,





included three main specific moments:

1. open rehearsals in February and March 2012, to go over the theatrical material;
2. a performance in Turin in April 2012, which took place in a school already involved in the project. Its purpose was to present some of the scenes included in the play and to ask the children for feedback, to check the suitability of the language used, the directing and creative choices, as well as the show's context, style, and content;
3. open rehearsals in April 2012 to present the show to the person in charge of the Sanpei project, in order to decide on the final version of the play and assess the quality of its content and style.

At the end of the show, children and researchers were able to express their ideas in a conversation with the actresses and the director. This helps identify the issues and stage dynamics which impress the children the most, while also checking that the show is effective for what concerns its content, as well as from a pedagogical and cognitive point of view. Furthermore, the discussions provide further means to understand the show and suggestions on how to investigate the matter when back at school. Hence, the theatrical event stimulates the learning activities at school not only through the lab meetings but also through the pedagogical and cognitive re-elaboration of the issues at hand initiated after having watched the show. As said above, the audience plays an active role and becomes the protagonist of the theatrical event.

The children understand the different levels of interpretation proposed by the show. On the one hand, they understand the relation between the characters: one is concerned about the sea and about protecting the environment, while the other one is not. The children notice their conflict and mention the fact that the two women have "arguments".

On the other hand, the young audiences also understand that the setting (the shop and the chair) is a pretext to allow the two characters to speak about the sea, pollution, and environmental sustainability. Hence, they recognise the stage structure imagined by the company, i.e. the two levels of theatrical writing.

The children express a wide range of ideas on the topic of fish farming.

Lastly, the children seek to achieve a dialectic synthesis, indicating the conflict between the two leading characters as an opportunity to exchange views, and suggest possible solutions to their disagreement: "The woman who is not concerned about the problems of the sea could move closer to the other woman's point of view because she likes fish very much".

The show presents the contradictions of life linked to the relationship between mankind and nature and provides the background for further discussion when the children are back in class with their teachers.

Premiere of Sano come un pesce, Rome, 11th-12th May2012

The show opened in Rome and was presented to the children of the two primary schools involved in the Sanpei project. The pupils recognised all the topics presented during the show. They understood that, through the theatrical form, the character of Arturo spoke about his dream of a sustainable fish farm. They identified the various dramaturgic levels included in the show, in particular the relationship between the two women. Many pupils mentioned the relationship between the two characters, who argue not only about how to arrange the chairs but also about their idea of the world. The characterisation of the two women, «one who worries about the sea and the other one who doesn't», strikes a chord with the children and reveals their ethical sensitivity. The fact that a person «thinks about the sea and not only about her own life» is an important idea for the children, as is safeguarding the sea environment. The children worry about pollution – «the sea is more and more polluted» – and most of them caught the reference to the ship Costa Concordia, sunk near the Giglio Island off the coast of Italy in January 2012. The Onda Teatro theatre company chose to talk about this recent human and environmental catastrophe because it had often been mentioned in the news and the children were familiar with it, hence they could speak about it and try to find some answers.

Some pupils were fascinated by the movement, music, and dialogue scenes included in the play. The ironic, comical, and surreal elements stirred the children's interest and enthusiasm but also created signs that they were able to recognise as they interpreted the show rationally at a later stage. They showed great interest for the theatrical language, which helped them understand the topic rationally. They understood that «the discussion on pollution started from something simple, from a chair», which means that they identified the pretext, the stage situation set by the actresses to speak about the sea. Furthermore, they offered a cognitive interpretation of the show: “they have made it very funny but, at the same time, you can learn a lot of things”. The children realised that irony, comic sense, and the absurd quality of some situations are the form that encompasses the content. The fact that the form is the content “precipitated”, i.e. that the form holds the content and that the two concepts are closely linked, is made very clear by the great German philosopher Adorno (1975, p. 9): “If art opposes the empirical thought through the element of form – and the mediation between form and content is not conceivable without distinguishing between them –, then the mediation is to be sought rather generally in the recognition of aesthetic form as sedimented content”. The conversations with the pupils after the end of the performances confirmed the usefulness of direct discussions with the young audiences who have just seen the show and whose minds are still filled with its atmospheres, emotions, and tales.

Tour

After premiering in Rome, *Sano come un pesce* was performed in many theatres of Italy. Discussions with the audiences who had watched the show allowed the theatre company to grasp





further nuances in the pupils' opinions and their degree of comprehension of the topic, thus making it possible to assess the impact of the show on children who had not participated in previous workshops on the subject of marine life and environmental sustainability. The rational re-elaboration of the themes presented by the play is useful to the teachers, who can then discuss them in class, and it also helps the students in their critical analysis of the show. In any case, the performance has a deep impact because the children remember it as a special moment in their daily life. The actors and the audiences share an exceptional learning, relational, and communicative experience. Communication is not univocal: images, suggestions, and tales are presented from the stage, while the audiences laugh, offer brief comments, or fall silent, showing their utmost concentration. At the end, after this intense sharing of a unique experience, a rational and cognitive exchange is set in motion. They easily identified the topics presented: "You wanted to tell us that we must stop polluting, we must respect our planet". During the show, they also offered numerous comments when the actresses were speaking about food and various recipes: "Delicious" "Yummy" "Yuck!" etc. They understood that the show presented the idea that we can choose what to eat. The children participated with enthusiasm, they laughed during comical scenes, and followed Arturo's story with great attention. Aquaculture is presented in the show through a theatrical hyperbole, which shifts from reality to an imaginary farming paradise, a mythical place where the fish are healthy and tasty. The children were very interested in the character of Arturo, because he presented a surreal dream, and during his story the theatres always fell silent, confirming the audiences' great concentration. In this way, the children were stimulated to think of how important it is not to deplete the sea of fish and to consider the fact that there actually exist alternatives to intensive fishing. It can be concluded that the boys and girls were stimulated by the show from different points of view and reacted to it by grasping its poetic, comical, cognitive, and didactic aspects.

Conclusions

Sano come un pesce is a co-production of the Italian National Research Council and the Onda Teatro theatre company. The idea behind it is to investigate *if* and *how* a theatre show can convey complex scientific content to children. The difficult topic to be explained to children is that of sustainability, understood as the best possible compromise between environmental and socio-economic needs at a given historical moment, considering the available knowledge and technologies. Several situations in which environmental resources are used generate conflicts among the stakeholders involved, because of their opposing interests. It is plausible to assume that in the future such situations of conflict will increase and become "global", involving stakeholders and geographical areas further and further away from one another. It is therefore necessary for the managers of these resources to develop mediating and negotiating abilities. This can be achieved by better understanding the multidimensional and indefinite nature of sustainability: there are no inherently good or bad solutions, just better or worse solutions, and

none of them are permanent. The educational objective was pursued in practice through the Sanpei research project, which aimed at promoting sustainable ways to manage and consume fish resources, involving the entire system of public school canteen services, pupils included. This paper has described how the show was created, from the initial idea to the first performance and following reruns, as well as its various research and verification phases. Through a critical analysis of the creative process, the authors have tried to understand the education power of theatre in conveying complexity. At the same time, despite being aware of the fact that the creative process is to a certain extent ineffable in theatre and in any other form of art, the authors have investigated the most effective methods to achieve the set educational objectives. After analysing the development of the theatrical work – educational labs, the signs making up the show, and how the audiences have responded to it – and some pedagogical aspects – the value of education and how theatre can be experienced actively –, some conclusions can be drawn. *Sano come un pesce* is a difficult show, its plot complex, and its content rich in meaning. However, thanks to the actresses' skills, good directing choices, and intense work supporting the creative process, the show is able to convey values, arguments, and criticalities without biases, in a pleasant, involving and enjoyable way. The objective to raise the students' awareness about the sustainable exploitation of the planet's natural resources and the importance of responsible eating choices has been achieved. The parameters to assess how and to what extent this objective has been achieved are not scientific in nature, but dialectic and cultural. The children felt close to the topic and participated in the discussions. Those who had previously learnt more about the topic – the students from Rome involved in the Sanpei project – responded to the show with greater awareness, but their involvement was comparable to that of the children who had no previous preparation and of the children who had participated in theatre lab meetings. The pupils' reactions during the show – their participation and emotional involvement – and after the show, while talking to the actresses, confirm that they were particularly interested in the relationship between the two characters and in their different ways of dealing with the topics of environmental protection and fish consumption. On-stage discussions were seen by the children as very exciting and as key to understanding the show. During the conversations with the students, it clearly emerged that, despite their strong ethical sense, the children easily accepted the idea of compromise, not only for utilitarian reasons but also as a way to overcome contrasts. Hence, the different attitude of the two characters allowed the pupils to approach complex matters thanks to the presentation of contrasting points of view offered by the actresses. The children were invited to ponder the issues at hand without having to take sides but identifying more with either one or the other position. This reflection and identification process fed their critical spirit and laid the foundations to enable them to choose their stance freely, within an educational process in which the answers are not predetermined. In brief, the main idea was that the discussions between the two actresses would be able to generate





critical thoughts, in the belief that “theatre is not reality, theatre ‘describes’ reality to question it”. (Luzzatti and Conte, 1977, p. 15). A theatre production naturally reaches out to fewer people than a film or a website, but the level of involvement is not comparable. Differently from other means of communication, theatre provides an *experience*. As seen in the introduction to this chapter, the theatre is a place of participation, education, transformation, and change. The students who were involved in the theatre labs and in the creation of the play experienced an opportunity for growth. Through the dramatic game, made of fun and emotional and relational involvement, they experimented with themselves in a free and protected context. They were able to express their ideas about the complex issues addressed by the project, learn something new, and think about how their daily actions (such as choosing what to eat) can affect the protection of the environment. This marked a transformation in their attitude, as they achieved greater awareness. At a different level, the same is true for the students who only watched the show, without being involved in other activities. Sitting in a theatre with other people and watching an event taking place *here and now* influenced their perception and led them to participate. The quality of their presence was different from what usually happens in their daily life. This enabled them to broaden their cultural horizons and to change their usual perspective when looking at the world. Such deep transformation was further supported by their conversations with the actresses and by follow-up work with their teachers. The children would go home and say they had been to a *magical* place where they had a *special* experience in which they participated actively. Once again, the concept can be better understood by referring to Luzzatti and Conte: “If I applaud, I can encourage the actors and elevate the tone of the show. If I boo, I can put them off. [...] Moreover [...] the introduction of a debate at the end has resurrected the long-forgotten third act, rich in unexpected turns of events and acted off the cuff. The stage and the audience communicate and the spectators participate directly, actively” (*Ibidem*, p. 10). The audience and the actors create a “sacred” moment, allowing the children to understand the topics presented at a deeper level in comparison to a standard lecture. “The difference between other forms of mass entertainment and theatre lies precisely in the emotional and critical relationship which tends to bring the actors and audiences together, into one body” (*Ibidem*). The feeling of having had a concrete, tangible and yet unique experience greatly contributes to the students’ cognitive awareness and ability to formulate opinions on the topics presented. Their direct participation supports the development of their critical spirit and extends beyond the viewing of the show, including also the creative process, the research phase, and the checking of content and form, during the lab meetings and open rehearsals. The working methodology chosen by the company seems to be crucial to the success achieved by the show. On the one hand, the students enjoy the playful, emotional, and cognitive experience offered by theatre; on the other hand, the authors’ work on the show is enriched by the children’s reactions, within constant and fruitful exchanges. The results of this work show that theatre can be an effective tool in conveying scientific and complex concepts. This type of collaboration should

certainly be repeated when developing educational projects to circulate scientific concepts among young people. However, some critical aspects can be identified. Firstly, limited financial resources might hinder the performance of the play across the country, which is fundamental in order to fully exploit the potential of a theatre show as an educational tool. Furthermore, difficulties in communication between the world of science and that of art require the definition of a common language and common objectives, while fully respecting the different roles and missions of the two communities. From this point of view, scientific research should improve its ability to identify measurable effects of artistic performances. The challenge is to ensure that the two fields can effectively support each other in achieving the aim to educate the young generations.

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“Kinyivi”

Programa de Estrategias Creativas para Fomentar la Conservación del Ambiente .

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RESUMEN

La palabra Kinyivi, en lengua indígena Gayón significa “Vamos” y hace una invitación a fomentar la conservación del ambiente, este programa educativo contiene estrategias creativas orientadas a la enseñanza de la educación ambiental y tiene como propósito fundamental fortalecer los valores ambientales de los y las estudiantes de una manera dinámica y participativa, que les permitan identificar las relaciones del hombre con el ambiente e incorporarse de manera responsable en los procesos de gestión ambiental. Está enmarcado en la modalidad de Proyecto Especial y presenta una estructura en cuatro fases: fase (1) diagnóstica , una fase (2) de planificación de actividades , una fase (3) de ejecución y por último la fase (4) de evaluación; El programa brinda al docente estrategias que le permiten estimular la creatividad de los estudiantes mediante actividades teórico-prácticas que activan los procesos creativos tales como la redefinición, originalidad, fluidez , divergencia y originalidad. Presenta 04 módulos de actividades en las distintas áreas de estimulación creativa y las temáticas seleccionadas para las actividades son biodiversidad, residuos sólidos y agua. El trabajo se desarrolla en el Liceo Bolivariano “Francisco José Rojas” ubicado en el Municipio Palavecino, estado Lara y está dirigido a estudiantes que el cuarto año del subsistema liceo bolivariano. Para el logro de los objetivos se desarrollaron técnicas de generación de ideas, elaboración de artículos con material reutilizable , utilización de juegos didácticos, eco-adivinanzas, salidas de campo, exposiciones, talleres ambientales, elaboración de murales, diagnósticos en la comunidad, visita a instituciones, ferias y la conformación de la brigada ambiental, entre otros observándose interés y participación por parte de los estudiantes.

Introducción

En Venezuela, país que otorga gran importancia al proceso educativo se concibe la Educación Bolivariana, fundamentada sobre la base de la concepción educativa de Simón Rodríguez , vista como un proceso colectivo e integrador, a la sociedad, como una





gran escuela formadora de ciudadanos y ciudadanas; así también los postulados del pensamiento Robinsoniano, Bolivariano y Zamorano, se define ésta, como un proceso político y socializador que se genera de las relaciones entre escuela, familia y comunidad; la interculturalidad, la práctica del trabajo liberador y el contexto histórico- social.

En consecuencia, la sociedad en su proceso dinámico de aprender- desaprender- aprender hace de la educación un proceso en permanente construcción, donde los niños, niñas, adolescentes, adultos y adultas son asumidos en su integralidad y complejidad; donde se consideran las experiencias educativas que conllevan al desarrollo de conocimientos, valores, actitudes, virtudes, habilidades y destrezas en cada una de éstas.

El Sistema Educativo Bolivariano (2007) establece cuatro pilares fundamentales para el desarrollo integral del nuevo ser social, humanista y ambientalista, ellos son: Aprender a Crear, Aprender a Convivir y Participar, Aprender a Valorar y Aprender a Reflexionar. De la frase inventamos o erramos, pronunciada por el maestro de América, Simón Rodríguez (1828) en la obra Sociedades Americanas citado en el currículo bolivariano (ob.cit.) surge el pilar de la educación Aprender a Crear; es decir, a innovar, a ser originales y libertadores y libertadoras; lo cual supone fortalecer y desarrollar cualidades creativas en los estudiantes.

Desde esta perspectiva, el fomento de la creatividad se logrará en la medida que la escuela, en relación con el contexto histórico-social y cultural, la incentive a través de un sistema de experiencias de aprendizaje y comunicación; planteamiento sustentado en el hecho de que el ser humano, es un ser que vive y se desarrolla en relación con otras personas y el escenario que lo rodea. De allí que, para desarrollar la creatividad los docentes deben valorarla y desarrollar los aprendizajes desde una práctica creadora, en espacios sociales que permitan relaciones armoniosas, en un clima de respeto a las ideas y convivencia; así como de trabajo cooperativo, experiencias y vivencias con la naturaleza.

Tal como está planteado en el Currículo Bolivariano (ob. cit.) la intención es promover la formación de un ciudadano, con autonomía creadora, transformadora y crítica, así como una actitud emprendedora para poner en práctica nuevas y originales soluciones en la transformación endógena del contexto social-comunitario.

De lo señalado, parece que la creatividad es una conducta urgente y que además, ésta habilidad debe permear cualquier ámbito, desde el arte, el deporte, la cultura, a la vida cotidiana, pasando por las ciencias y la empresa. Monreal (2001) señala que: "...se reclama con exigencia la necesidad y prisa de la intervención de la creatividad en todo lo que se hace", pero la creatividad pareciera ser aparente e inaprensible, un hecho

complejo cuyo análisis científico provoca a veces momentos de incertidumbre, y aunque su comprensión completa requiere una colaboración multidisciplinar.

Siguiendo con estas ideas, es pertinente citar a De La Torre (1997) catedrático español experto en el tema de la creatividad y la formación docente, este autor, defiende la idea que el hombre se hace humano cuando crea, y ello es posible cuando aparece la conciencia, enfatiza la necesidad de crear en la escuelas una conciencia colectiva que propicie la tolerancia a la divergencia de ideas, creencias y razas, que esta conciencia se fortalezca a nivel individual y grupal en las aulas. Vale destacar que hace hincapié que en las instituciones, la creatividad debe considerarse como una cultura diferente para solucionar los problemas existentes y, sobre todo, para adelantarse al surgimiento de estos, con amplitud, de miras, flexibilidad y actitud innovadora.

Sobre esta base, es posible pensar en una educación que se anticipe al desarrollo de los estudiantes, que se dirija a una transformación, por parte de los escolares, del conocimiento recibido en clases, al hacer uso de una serie de recursos de su personalidad y la reformulación de los problemas que se presenten, entre otros aspectos.

Sin embargo, para lograr esto la escuela debe establecer un compromiso, debe en primer lugar revisar que ha hecho la institución en cuanto al fomento de la creatividad en los estudiantes; Debe sensibilizar a los docentes con nuevas estrategias y actitudes en cuanto a su práctica educativa y por último; Implantar en las instituciones el desarrollo de recursos psicológicos y pedagógicos en las diferentes asignaturas y que le permitirán alcanzar el objetivo.

En virtud de lo expuesto, se plantea el diseño de estrategias que permitan desarrollar aprendizajes que propicien y estimulen el pensamiento creativo así como también el desarrollo y fortalecimiento de los valores hacia la conservación del ambiente, en los estudiantes del Liceo Bolivariano “Francisco José Rojas” ubicado en el sector Los Pinos, Cabudare, Municipio Palavecino, Estado Lara.

Para el desarrollo de la investigación y selección del área del conocimiento donde se enmarcó el estudio se consideraron las razones que a continuación se detallan: En primer lugar la Constitución de la República Bolivariana de Venezuela (1999), en el Capítulo IX, Artículo 127, plantea que: “Es una obligación fundamental del Estado, con la activa participación de la sociedad, garantizar que la población se desenvuelva en un ambiente libre de contaminación ...”.





En segundo lugar, el programa de Biología del nivel bachillerato es muy amplio y presenta variada información además de contenidos muy importantes en materia ambiental que el estudiante debe conocer, tal es el caso del tema relacionado con La diversidad biológica y conservación de recursos y en tercer lugar el Liceo Bolivariano “Francisco José Rojas” está ubicado en el Municipio Palavecino, al pie del Parque Nacional Terepaima. En tal sentido, resulta imperante el diseño de un programa de estrategias que fomenten la conservación del ambiente como estrategia metodológica para la institución antes mencionada y con el propósito de sensibilizar a los estudiantes mediante la promoción de nuevas actitudes de responsabilidad y compromiso hacia la protección ambiental.

Objetivos de la Investigación

Objetivo General

-Diseñar un programa de estrategias creativas para fomentar la conservación del ambiente.

Objetivos Específicos

-Diagnosticar la necesidad de un programa de estrategias creativas para fomentar la conservación del ambiente.

-Diseñar el programa de estrategias creativas para fomentar la conservación del ambiente.

-Validar el programa de estrategias creativas para fomentar la conservación del ambiente.

Fundamentación Teórica

La presente investigación considera los trabajos que anteceden y resulta oportuno mencionar los siguientes:

La investigación desarrollada por Sarmiento (2007) titulada “*Efectos de un programa en la creatividad de docentes de educación inicial*”, el propósito fundamental de esta investigación fue determinar el efecto de un programa en la creatividad del docente de Educación Inicial. Dicha investigación estuvo sustentada teóricamente por Guilford 1956, De La Torre 1996 y Ortiz 2004. El estudio se circunscribió en una investigación experimental, nivel explicativo y de tipo experimental de campo, con diseño pre-

experimental en la forma de pre-prueba y post-prueba con un solo grupo. La población estuvo constituida por 25 docentes de aula de los cuales no se obtuvo ninguna muestra, pertenecientes al sector escolar N°5 de la parroquia Francisco Ochoa del Municipio San Francisco, a quienes se les aplicó el test G-Q de creatividad verbal contentivo de 5 partes especificadas en sinónimos, usos posibles, frases ordenadas, trigramas y mini-historia.

Para el análisis de datos se utilizaron los criterios de la estadística descriptiva diferencial y la prueba T de *student*. Se concluyó que el efecto del programa de creatividad, sí influyó significativamente de acuerdo a los resultados arrojados donde se especifica que, si se aplica un programa la creatividad del docente se ve incrementada. Se recomendó finalmente sensibilizar a los docentes sobre el valor educativo y social de la creatividad, así como su valor estratégico para adaptarse a los cambios que exige la integración educativa en el contexto social.

El desarrollo positivo de un programa para promover la estimulación de la creatividad, quedó en evidencia en la investigación anteriormente citada, al presentar resultados favorables para el investigador, dejó ver además, que los niveles de la misma se incrementan y probablemente esto se traduzca a largo plazo, en cambios significativos en la manera como imparten las clases las docentes participantes en el estudio. Los educadores creativos estimulan a sus estudiantes a ser innovadores, sin embargo cuando no se cuenta con las herramientas necesarias para fomentar el potencial creador de las personas, éste proceso se ve obstaculizado o limitado, es por ello, que la creación de un programa para la estimulación de la creatividad vendrá a convertirse en un instrumento el cual docentes y estudiantes del liceo bolivariano sujetos de este estudio, podrán poner en práctica y de esta forma propiciar el desarrollo de la personalidad creativa que cada uno posee.

Capote (2000) ejecuta hasta la fecha, el proyecto “Jugar en Verde” , un modelo de extensión educativa venezolana , como empresa comprometida con el desarrollo sustentable, se identificó la necesidad de difundir la importancia de conocer y conservar la biodiversidad presente en los ecosistemas de la región nororiental venezolana donde la empresa opera. En este sentido, desarrolló un modelo creativo en sinergia con otros actores, que busca generar conciencia en la ciudadanía sobre la conservación del medio ambiente y el rol de la sociedad en su cuidado. Entre sus logros destacan: 1) Centro Comunitario de Biodiversidad Yabo Verde, espacio que permite impulsar actividades de investigación, producción sustentable y extensión, en alianza con las comunidades y la





empresa, para el manejo, uso y conservación de la biodiversidad. Se han formado 18 parabiólogos comunitarios, y se han construido tres zoológicos y activado un sendero ecológico. 2) Avistamiento, identificación y difusión de las principales especies de fauna y flora de la región nororiental de Venezuela, a través del programa Cácería Fotográfica Digital. Más de 350 participantes y más de 108 especies inventariadas (fauna silvestre). 3) La exposición itinerante Series Lúdicas que representa en madera la fauna avistada en la región nororiental. Más de 284.740 mil personas las han visitado. 4) El descenso significativo de los focos de incendios gracias a las actividades de concienciación que adelanta la empresa a través de “Jugar en Verde”. 5) Talleres de Mini Artesanos con Sello Verde en escuelas primarias que consisten en la elaboración de juegos didácticos representativos de las especies de fauna silvestre. Más de 10 mil niños formados. 6) Inserción laboral de 22 estudiantes con discapacidad en el proceso de fabricación de piezas artesanales.

Programa de Estrategias

Para Hernández (1995): “programar es un proceso consistente en dar unidad y estructura a la labor educativa, teniendo en cuenta al estudiante, su entorno, los medios y materiales posibles”. El programa implica una formulación resumida de la propia teoría educativa. Por lo tanto, una primera condición para que un programa sea eficaz es la necesidad del mismo, así como apoyarlo en una base teórica de la educación como de la enseñanza. Para ello el docente, en primer lugar debe, cuestionar cuales son los principios filosóficos y científicos que sustentan su concepto de educación. Cuando el docente ha clarificado el contexto filosófico, psicológico y social, donde va a realizar su labor de orientación en la formación de las nuevas generaciones, debe diseñar el programa a los elementos que lo integran.

El programa se concibe entonces, como una propuesta de trabajo elaborado por el docente en función de una hipótesis de aprendizaje, la cual es el camino que el docente traza para que los estudiantes puedan alcanzar determinadas metas, lo cual representa en forma resumida, la formulación de la propia teoría educativa del docente, así como dar estructura a la praxis educativa mediante la interrelación de elementos intervinientes en todo el proceso de enseñanza y aprendizaje como son: establecer objetivos, seleccionar y organizar contenidos, tomar decisiones en relación a las estrategias, recursos y evaluación (Matos, 1998).

Los objetivos que persiguen los programas propuestos en el ámbito mundial en materia educativo ambiental son los siguientes: facultar a las personas para que se conviertan en agentes activos del desarrollo sostenible y equitativo, promover el entendimiento que las comunidades son esenciales para cambiar las actitudes que rodean los problemas ambientales, fortalecer la necesidad de una mejor comprensión de los problemas ambientales y una educación ambiental, alentar la formación de alianzas para conseguir que todos los pueblos tengan ante sí un futuro más próspero y seguro (CENAMEEC, 1994).

La Creatividad

Etimológicamente el término "creatividad" se deriva del latín 'creare' y está relacionada con la voz latina 'creceré' (crecer). Podría decirse que Creatividad significa "crear", construir cosas nuevas y llegar a conclusiones útiles para la resolución de las situaciones diarias del individuo.

Existen diversas definiciones de creatividad, citaremos en primer lugar a De la Torre (1996) quien considera que la creatividad consiste en "...la capacidad de generar ideas nuevas y comunicarlas además es la energía potencial para llevar a cabo cambios en nuestro entorno cotidiano" (p.22).

Por otra parte, Guilford, (1968) citado por Galván, (1983) hace mayor énfasis en la personalidad creativa, para ello afirma que la creatividad se refiere a aptitudes que las define como factores o características de la personalidad creadora, entre los cuales menciona:

A. Fluidez: es la riqueza en el lenguaje (verbal o gestual) tanto por la cantidad como por la cualidad.

B. Flexibilidad: es la versatilidad, movilidad y capacidad de combinación. Se pueden analizar dos tipos de flexibilidad, la espontánea y la adaptativa. La flexibilidad espontánea está definida como la habilidad para producir gran variedad de ideas con la libertad de persistir. La flexibilidad adaptativa se da cuando hay un tipo de problema que requiere soluciones más inusuales. En este caso los métodos convencionales no servirían.

C. Originalidad: es el pensamiento independiente que crea productos nuevos con distancia, rareza y calidad.

D. Pensamiento Divergente: es el pensamiento creativo que aparece cuando está por investigarse un problema y aún no existen patrones o medios convenientes para





resolverlo, produciéndose una gama de soluciones apropiadas y no una única solución correcta.

De ahí surge la necesidad de oponer a una enseñanza crítica y lógica otra más creadora, incentivando la autorrealización y el desarrollo de la personalidad creadora.

Estos autores coinciden al señalar que la creatividad es un proceso mental que habilita al individuo a pensar de una forma no lineal y hacia el desarrollo de ideas, no convencionales y de mucha utilidad para enfrentar sus realidades. Pero al poner estas afirmaciones a la luz de los hallazgos de las investigaciones citadas en este estudio se hace evidente que deben ejecutarse acciones o actividades entre los estudiantes para que este potencial creativo sea estimulado y no desaparezca o se fosilice a lo largo de su proceso educativo.

En relación a este alegato se cita a Torrance (1977) quien ha demostrado a través de sus investigaciones que la mayoría de los pequeños poseen un valioso potencial creativo y que es destruido en la medida que avanzan en su escolaridad.

Resulta imperante, que hoy surja la necesidad de formular una pedagogía creativa que abarque todos los programas de estudio en sus niveles y modalidades para reevaluarlas e integrarlas, permitiendo de esta forma que ocurran procesos de transformación en los estudiantes, creando e innovando, evitando la rigidez y los esquemas para darle aplicabilidad sobre la base de una educación contextualizada en el medio cultural y social en el que se desarrolla.

Conservación Ambiental

Etimológicamente proviene del latín *conservatio*, entendiendo la conservación como la acción y efecto de conservar (cuidar, resguardar o proteger alguna cosa o lugar). El término es muy utilizado en el contexto ambiental y en el campo de la biología, entre otros. Cuando se habla de la conservación ambiental, se hace referencia a la protección de la diversidad biológica y todos los recursos disponibles en el planeta para el desarrollo de la vida, esta acción garantiza la permanencia en tiempo y espacio de los seres humanos, animales y plantas, evitando la contaminación y la depredación de dichos recursos.

Operacionalización de la Variable

Propósito	Variable	Definición Conceptual	Definición Operacional			
			Dimensión	Indicador	Ítems	
					Doc.	Est.
Diagnosticar la necesidad de Diseñar un Programa de estrategias creativas para fomentar la conservación del ambiente dirigido a estudiantes del Liceo Bolivariano "Francisco José Rojas"	Necesidad de diseñar un Programa de estrategias creativas para fomentar la conservación del ambiente dirigido a estudiantes del Liceo Bolivariano "Francisco José Rojas"	Carencia de un proceso que permita <u>generar ideas nuevas</u> para el estudio y conservación del ambiente .	Cognoscitiva	Nivel de conocimientos	1-5	1-4
			Afectiva	Nivel de Identificación	6-8	5-8
			Procedimental	Actividades	9-16	9-16

Cuadro 1 - Matriz Operacional de Variables

Metodología: Naturaleza de la Investigación

El estudio se enmarcó dentro de la modalidad de proyecto especial; Según el Manual de Trabajos de Grado de Especialización y Maestrías y Tesis Doctorales de la Universidad Pedagógica Experimental Libertador (2006). Estuvo apoyada en una investigación de campo. Debido a su carácter de proyecto especial metodológicamente se efectuó en tres fases, Fase I: Diagnóstico, Fase II: Diseño del Programa y Fase III: validación del Programa.

Fase I: Diagnóstico

Se desarrolló a través de una investigación de campo, mediante la observación directa y participación vivencial del investigador, con la finalidad de determinar la necesidad de diseñar el programa.

Fase II: Diseño del Programa

Se procedió a diseñar el Programa considerando para el mismo los resultados obtenidos en las fases anteriores, éste tiene como objetivo brindar al docente estrategias que le permitan estimular los procesos del pensamiento creativo en los estudiantes mediante actividades teórico-prácticas adaptadas al programa de Biología del cuarto año de bachillerato relacionadas con la temática ambiental. En primer lugar, se presenta





información general acerca de la creatividad para que los docentes manejen con mayor amplitud, las bases teóricas que sustentan el programa y posteriormente las actividades que serán realizadas por los estudiantes, que están orientadas a la estimulación del pensamiento creativo.

Fase III: Validación del Programa

Se procedió a la validación del contenido del Programa a través de la técnica de juicio de expertos, con el propósito de estimar el grado de representatividad del material elaborado.

Población y Muestra

La población tal como la define Tamayo y Tamayo (1999) “es la totalidad del fenómeno a estudiar” (p. 220). Sobre la base del estudio, la población estuvo constituida por ciento ochenta (180) estudiantes de 4to año de bachillerato, y nueve (09) docentes del área de biología.

La muestra del estudio en virtud de que la población de docentes es pequeña la muestra estuvo representada por el 100% de los sujetos que conforman la población, en el caso de la población de estudiantes se tomó una muestra por afijación del 30%, Tal como se observa en el siguiente cuadro. (ver cuadro 2)

Estrato	Total	Muestra
- Estudiantes	180	60
- Docentes	09	09
Total	186	69

Cuadro 2- Sujetos de Estudio. Fuente: Rodríguez, M. (2012)

Procedimiento y Técnica de Análisis de Datos

Una vez aplicado el instrumento a la muestra constituida por (69) sesenta y nueve sujetos del liceo Bolivariano “Francisco José Rojas”, se procedió al análisis mediante la estadística descriptiva de frecuencias y porcentajes, así, como la representación gráfica a

través de cuadros y gráficos de barras por medio del programa Excel, para determinar de acuerdo a los resultados obtenidos la necesidad de diseñar el programa de estrategias creativas para fomentar la conservación del ambiente dirigido a estudiantes del Liceo Bolivariano “Francisco José Rojas”, Municipio Palavecino, Estado Lara.

Resultados

Dimensión Indicador	MAN		AN		MN		BN		MBN	
	Docen.	Estud.	Docen.	Estud.	Docen.	Estud.	Docen.	Estud.	Docen.	Estud.
Cognoscitiva Nivel de conocimiento	31,28	31,66	28,86	49,58	28,86	16,66	8,88	2,08	--	--
Afectiva Nivel de Identificación	40,73	38,75	29,62	44,58	18,51	15	11,11	1,67	--	--
Procedimental Actividades	27,77	45,41	36,10	41,66	31,94	10,20	2,77	2,08	1,38	0,41
PROMEDIO	33,26	38,60	31,52	45,27	26,43	13,95	7,58	1,94	0,46	0,13

Cuadro 3

Distribución de porcentajes promedios según respuestas de los docentes y estudiantes sobre la necesidad de diseñar un programa de estrategias creativas para fomentar la conservación del ambiente, dirigido a estudiantes del Liceo Bolivariano “Francisco José Rojas”, Municipio Palavecino, Estado Lara.

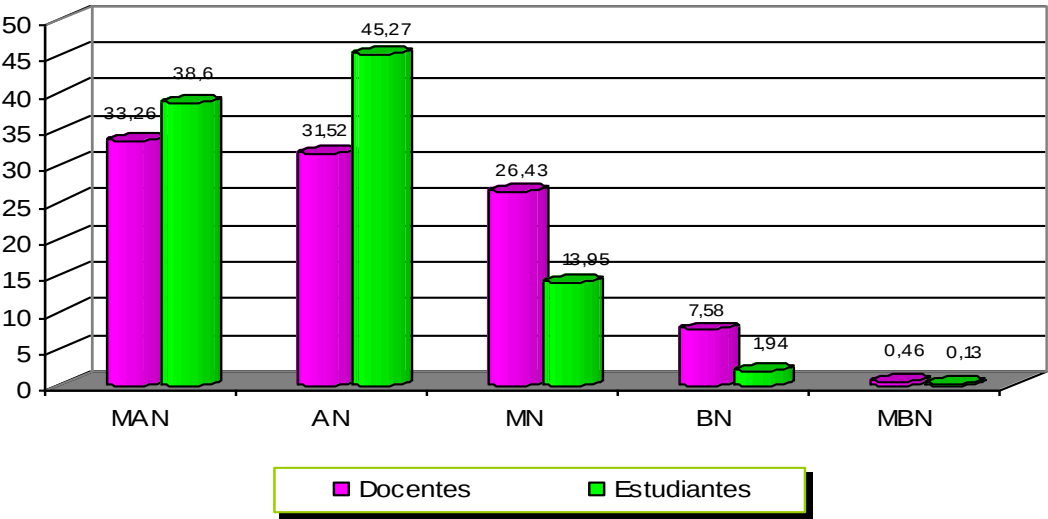


Gráfico 1. Representación porcentual de los promedios de las respuestas de los docentes y estudiantes En cuanto al cuadro 3 y gráfico 1, representan los promedios de las respuestas dadas por los sujetos de estudio a las dimensiones cognoscitiva, afectiva y procedimental, se puede observar que los docentes en promedio se colocaron en la categoría muy alta necesidad, con un porcentaje de 33,25%. Se puede precisar que en la dimensión afectiva indicador nivel de identificación, se obtuvo el porcentaje más alto con un 40,73%, en relación a la necesidad de recibir las herramientas que le permitan promover el desarrollo





de la creatividad en sus estudiantes. En orden de valor de porcentaje, sigue la categoría alta necesidad con un 31,52% de las respuestas en promedio, destacándose la dimensión procedimental con la necesidad de ejecutar actividades lúdicas, artísticas y pedagógicas que estimulen la creatividad de los estudiantes y a su vez fomenten una actitud positiva hacia la conservación del ambiente.

En relación a los promedios obtenidos con el instrumento de los estudiantes, se puede observar que el mayor porcentaje se ubicó en la categoría alta necesidad con un 45,27%, pudiéndose constatar que en la dimensión cognoscitiva, nivel de conocimiento se situó el porcentaje más alto (49,58%), seguido de un 44,58 en la dimensión afectiva nivel de identificación y 41,66% en la dimensión procedimental, actividades. También se puede observar que la categoría muy alta necesidad se ubica en segundo lugar con un 38,60%, destacándose la dimensión procedimental con un 45,41%. De acuerdo a estos resultados, se puede inferir que hay una alta y comprobada necesidad de diseñar un programa que impulse a los estudiantes a desarrollar la creatividad y se promueva la conservación del ambiente.

Conclusiones

- Es evidente la necesidad de que la escuela promueva como ideal filosófico una relación armónica hombre-naturaleza-sociedad y ésta se cultive desde muy temprana edad; una relación de respeto basada en el conocimiento, que trascienda la teoría y que se transmita desde la práctica conjunta en diversos escenarios del entorno.
- La incorporación de la creatividad a la vida cotidiana y en el currículum escolar, se evidencia como necesario que la institución educativa favorezca su incorporación en la formación integral de los estudiantes, en lugar de considerarla como algo adicional que se realiza eventualmente en el desarrollo de las clases, pues las experiencias que tienen los estudiantes en sus actividades escolares, de alguna manera son determinantes en su formación como individuo, ya que se integran a su personalidad, a su forma de percibir el mundo y de enfrentar la realidad.
- Durante el estudio se desarrollaron técnicas de generación de ideas, elaboración de artículos con material reutilizable, diseño y utilización de juegos didácticos, eco-adivinanzas, salidas de campo, exposiciones, talleres ambientales, elaboración de murales, entre otras actividades, a fin de estimular la fluidez, divergencia, flexibilidad ,

originalidad, redefinición , ejercitar la mente de los estudiantes y activar su personalidad creadora.

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La belle poubelle

Les impulsions créatives.

Ahmed ZOUBID, artiste-peintre sculpteur.

Les objectifs de l'exposition "LA BELLE POUBELLE"

- 1-Lutter contre la pollution pour protéger notre environnement.
- 2-Apprendre à valoriser soi-même les déchets et à les considérer comme des ressources.
- 3-Modifier nos comportements de gaspillage et de mise au rebut.
- 4-Découvrir la richesse de l'art de récupération du plastique recyclé en donnant une seconde vie à un objet que nous croisons des centaines de fois par jour.



"La belle poubelle", est la seconde vie de centaines de bouteilles et de bidons en plastique qui, après la consommation de leur contenu, étaient destinés aux dépotoirs des déchets domestiques, mais que l'artiste a bien voulu récupérer afin de lutter contre la pollution et leur donner une vie nouvelle, sous formes de sculptures singulières

1- "POLLUVITA"





Recyclage artistique du plastique, est une œuvre revendicatrice de l'écologie et de la dénonciation des pollutions occasionnées par les déchets en plastique issus de l'industrie alimentaire qu'il faut valoriser et considérer comme des ressources renouvelables.

Mais aussi, une belle manière de représenter les avantages et les dangers du plastique, de plus en plus souvent, jeté dans la nature depuis son apparition, c'est une pollution grandissante dont il faut modifier nos comportements de gaspillage et de mise au rebut car le temps presse et les dommages à l'environnement seront irréversibles.....

2- Autres œuvres revendicatrices de l'écologie :

Le chien blanc



L'agneau



Le loup



Le chien noir



Le vautour



Le poisson

Peut-on intégrer ce recyclage dans l'écologie?

Bien sûr, car l'écologie est le fait de rendre plus sensible à la protection de l'environnement."Elle n'est pas quelque chose d'abstrait. C'est une révolution culturelle qui affecte nos modes de consommations particuliers et nos usages en tant que citoyens et nos modes de productions et d'actions collectives".

Sensible aux conséquences de nos modes de vie sur l'environnement, c'est par ce biais que l'artiste redonne à la matière une identité nouvelle sous la forme de créations insolites. C'est aussi sa façon à lui de participer à la réduction des déchets.





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