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Who Cares About Children's Rights? Critical Multimodal Awareness and its Implications for the Design, Analysis and Use of Children's Online Educational Materials*

Abstract I: Questo contributo indaga le modalità di costruzione del senso dal punto di vista visivo/verbale in un sottocorpo di siti web istituzionali progettati da adulti al fine di sensibilizzare i bambini delle scuole elementari e medie sui loro diritti. I materiali multimodali di questo sottocorpo sono stati testati, per mezzo di questionari ed interviste semi-strutturate, su 100 bambini dalla terza elementare alla terza media in una scuola del territorio in cui l'inglese viene utilizzato come lingua veicolare. Lo studio utilizza la grammatica sistemica funzionale nella sua declinazione socio-semiotica applicata ad altri 'modi' comunicativi. Si rifà al concetto di *empowerment* come processo sociale multi-dimensionale che è stato indagato per mezzo di liste che si concentrano sulle principali strategie verbali e nonverbali messe in atto dai bambini per creare il senso in testi multimodali. Più precisamente, questo contributo discute i risultati emersi da questionari ed interviste semi-strutturate in riferimento soprattutto ai concetti di usabilità, accessibilità, consapevolezza critica, ed impatto dei messaggi. Il focus principale risiede nell'interfaccia tra le esplorazioni (spesso inadeguate) dei siti da parte dei bambini, e le strategie (spesso 'difettose') di costruzione dei siti stessi da parte degli adulti. Le implicazioni di questa ricerca sono duplici: da una parte, fornire ai giovani discenti le strategie per estrarre il senso da questi materiali e sviluppare la loro autonomia e coscienza critica; dall'altro, creare liste e linee guida per la costruzione multimodale di materiali da parte degli adulti, così da porre le basi per configurare una pedagogia linguistica critica che ponga al centro il ruolo del 'discorso' nelle pratiche sociali.

Abstract II: The present paper focuses on strategies for making sense of image/text relations in a sub-corpus of institutional websites specifically designed by adults to sensitize primary and early secondary school children to the issue of human (viz. children's) rights. The multimodal materials of this specific sub-corpus were tested, by means of questionnaires and semi-structured interviews, on 100 children from grade 3 to 8 in a local school where English is used as the main language of instruction. The research is informed by systemic functional linguistic theory in its social semiotic applications to other modes

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of communication. It draws on the notion of (here, children) empowerment as a multi-dimensional social process, investigated through the analysis of checklists focusing on the main verbal and nonverbal strategies children enact to make sense of the multimodal texts and on some basic problematic areas in adult-generated materials creating barriers to informing and eliciting the participation of young learners. More specifically, this paper discusses the main findings of children questionnaires and semi-structured interviews with particular reference to issues of usability, accessibility, critical awareness, and impact of message. The main focus is on the interface between children's (often inadequate) website exploration strategies and adults' (often defective) strategies of materials design. The two-fold implication of the research is: on the one hand, to provide young learners with remedial strategies for making sense of such materials while developing greater autonomy and critical multimodal awareness; and, on the other, to fine-tune checklists for analysis and offer guidelines and best practices for the multimodal construction of adult-generated materials, thus potentially configuring a critical linguistic pedagogy centrally concerned with the role of discourse in social practice.

1. Introduction

The PRIN project[1] within which the present analysis was conducted focuses on the accessibility of educational multimodal texts produced for (and, more rarely, by) communities of children of different age-groups and mediated through Information and Communication Technology (ICT)[2]. For these e-communities of children, access to ICT-mediated texts can constitute both an advantage (providing a wider range of stimulating and valuable learning opportunities, as well as expert advice at a low cost and at all times) and a problem (posing safety risks, like invasions of privacy and intrusive commercial practices; reinforcing socio-cultural stereotypes; naturalizing biased role models and/or behaviour patterns imposed by hegemonic communities, or the like). Indeed, recent research (see Livingstone *et al*. 2012) has shown that, as children's access to online materials grows, so does their exposure to risk of harm and perception thereof[3]. However, although violence against vulnerable vic-

[1] PRIN (i.e. National Relevance Research Projects co-funded by the Italian University Research and Education Ministry) 2009 – protocol no. 2009RL3NF4: ACT – *Access through Text* (Udine research unit's subproject title: MACE - *Multimodal Awareness for Children's Empowerment*).

[2] In this paper, the term 'accessibility' is not used to refer to web accessibility for people with special needs, but rather to digital multimodal texts, that are 'accessible' for e-communities of children, i.e. 'user-friendly', in terms of both message and ease of navigation.

[3] As Livingstone reports, "the EU Kids Online survey of 25,000 European children found that 30% of 9- to 16-year-old internet users had had contact online with someone not met face-to-face, and 9% had gone to a face-to-face meeting with someone first met online. Further, 21% of 11- to 16-year-olds had come across at least one type of potentially harmful user-generated content, while 15% (of 11- to 16-year-olds) had seen or received sexual messages on the internet. Next most common, 14% of 9- to 16-year-olds had seen sexual images on websites in the past year and 6% had been sent nasty or hurtful messages on the internet (Livingstone *et al*.

tims (including their subtle manipulation) is rated by children among the three main concerns about the risks posed by the Internet, "it receives less attention than sexual content or bullying in awareness-raising initiatives" (Livingstone *et al.* 2014: 271).

Convergence in media is changing the way in which texts – especially those created for children by adults in order to convey informative/didactic contents imbued with argumentative/persuasive messages – are not only planned and produced (i.e. user-generated)[4], but also accessed and negotiated by e-users. In exploiting the socializing affordances[5] embodied in the medium, children, who play a role in text fruition as active participants rather than simply 'readers' or 'viewers', are often at risk of being abused, manipulated or imposed upon. Therefore, paradigms of text design, analysis and user agency in e-participation on the web and in convergent media (films, cartoons, commercial adverts, social adverts, and the like) need to be re-assessed and reframed in the light of new, more flexible theoretical frameworks and guidelines which shift from a focus on text to a focus on action. At the same time, emerging multimodal web genres and practices and, consequently, new styles of accessing texts and learning through them, need to be systematically investigated and categorized (see e.g. Baldry 2011; Cambria *et al.* 2012; Campagna *et al.* 2012).

Against this backdrop, the sub-project conducted by the Udine research unit (entitled *MACE-Multimodal Awareness for Children's Empowerment*) was aimed at investigating access, in public (namely educational) settings, to web texts in English across three thematic sub-corpora (children's health, children's rights, children's environmental awareness). The *MACE* project set out to explore: i) whether and to what extent ICT-mediated texts/learning environments actually facilitate interconnections, creative skills and interactivity (Baron 2008); ii) how children can be helped to develop greater awareness of their multimodal skills and hypermedia potentialities in dealing with issues which are relevant to them and vital for the construction of their own social identity – which is the pedagogically-ecologic pathway to developing greater awareness of their right to self-expression.

Another important, related aim of the research was the creation of a data-bank of materials for education and language ecology, incorporating the latest developments and best practices in multimodal discourse and genre analysis, to be made freely accessible through

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2012). Of these risks, online bullying resulted in the highest proportion of children being upset; 'sexting' and pornography were perceived as less upsetting, and meeting new online contacts offline was the least likely to upset children" (Livingstone *et al.* 2014: 272).

[4] See Van Dijck: "[…] As the market for user-generated content further commercializes and is incorporated by new media conglomerates, the sliding scales of voluntarism are inversely proportional to the sliding scales of professionalism, resulting in new mixed models of labour. In order to understand the changes in user agency, it is important to scrutinize 'human resources' management of UGC sites such as YouTube. What characterizes the type of effort users put into creating and rating online content if this is not regularly paid labour? Why devote much time and energy to creating content and what to expect in return? The changes YouTube made in its policies towards users are typical of the current trend towards integrating amateur efforts into a capital- and technology-intensive media system" (2009: 49-50).

[5] The concept of affordances, used in studies of technological design to refer to what a technical environment offers relative to the person or group perceiving or recognizing that quality of the environment (Gibson 1979: 127), will be expanded upon below (see section 2.1.1.) in close connection with the concepts of user agency and empowerment.

a variety of convergent media to families, (CLIL and/or domain-specific English) teachers, health workers and social workers (e.g. professional trainers).

While adopting an ecological approach to English language learning in a critical awareness-raising environment, the present paper shall illustrate the main findings of the research conducted on children questionnaires and semi-structured interviews with particular reference to the "children's rights" sub-corpus, and to the issues of usability, accessibility, critical awareness, and participation models.

2. Rationale, methodological bases and scope of the research

The research was informed by systemic functional linguistic theory and its social semiotic applications to other modes of communication. More specifically, a considerable part of the study was based on Systemic Functional Multimodal Discourse Analysis (SF-MDA), an analytical practice which tests the applications of the key principles of Systemic Functional Linguistics to the analysis of semiotic systems other than, and/or synergically interacting with, language. In keeping with the overall focus of the Udine research unit within the PRIN project, the research dealt with children's empowerment as "a multi-dimensional social process that helps people gain control over their own lives. This is a process that fosters power in people for use in their own lives, their communities and in their society, by acting on issues they define as important" (Page & Czuba 1999). For the present purposes, empowerment will be investigated by analyzing the capability of children – facing problems and issues relevant to their own lives and socio-biographical situations – to discover and exploit the verbal and non-verbal affordances of ICT-mediated texts. These affordances are assumed to facilitate interconnections, creative capabilities and interactivity (Baron 2008) to such an extent that one-sided authoritative sources seem to become less and less acceptable, while the emphasis is shifted on a new 'learning ecology' based on participation and creative practice, content creation and interactivity (Greenhow *et al*. 2009).

Yet, as J. R. Martin perceptively reminds us, "a text" – whether 'mono-'[6] or multimodal, printed or ICT-mediated – "is still a meaning potential [which] will be taken up and read in different ways, according to the interested social subjectivities involved" (2003: 215) and subject to risks (viz. ideological manipulation) that may compromise effective learning and the young learner's autonomous growth, especially when children's access to Internet sources and materials is not adequately monitored. The strong research focus on children empowerment thus accounts for the choice of Critical Discourse Analysis[7] as the methodo-

[6] As Kress and van Leeuwen rightly point out, "all texts are multimodal" (1998: 186 *et passim*; Kress 1996: 20, 23), in the sense that written language is always also a visual arrangement of marks on a page. Yet, in analysing texts in which different semiotic modes interact in the meaning-making process, Kress and van Leeuwen (1996: 18 *et passim*) have shown that, while images of whatever kind are never neutral in that they fall within the realm of ideology as any other mode of discourse, a multimodal text may carry differing and even conflicting meanings at the verbal and visual levels. What is more, "even a text that seems to speak a single 'pure' voice speaks and is heard in a community of many voices and its meanings are made in relation to them" (Lemke 1988: 30).

[7] As Teun van Dijk effectively notes, CDA is "analysis with an attitude" (2001: 96), in the sense that it "explores the relation between language and power and the ways in which language is being used to produce,

logical framework which is, on the one hand, potentially more apt to provide children with greater learner autonomy; and which, on the other, is perfectly in line with our professional engagement and responsibility, in our role as language-and/as-culture educators, to promote ecology of verbal and non-verbal communication, so as "to raise our students' critical awareness of the ways in which people get manipulated, marginalized or silenced in and through texts" (Vasta 2005: 450), and ultimately to promote respect for the Other. The scope of investigation of the *MACE* project was threefold:

i. within the broader field of research into the discursive (viz. intermodal/intersemiotic) construction of identity, the project investigated strategies for positioning potentially or actually marginalized/underprivileged social identities, such as those of children; besides, it offered an account of the intermodal (verbal and non-verbal) resources to construct agency and responsibility and to project interpersonal relations of solidarity or dominance;
ii. within a critical-discourse, socio-pragmatic and interactional perspective, the research integrated existing analytical frameworks and models to explore the construction/manipulation of youth participation and consensus-raising; along these lines, it identified good practices in adult-child/peer-to-peer communication with a view to fostering critical awareness and thus contribute to empowering under-privileged e-communities in specific domains of their social interaction;
iii. within the wider context of education and language ecology, the research identified guidelines and an educationally accessible metalanguage shared by students and teachers for the construction and analysis of multimodal texts addressed to children; materials and best practices were disseminated to a wide range of relevant stakeholders (parents, educators, etc.) nationally and internationally.

Young and Harrison's words, the main reason for using a critical discourse approach to awareness-raising in language learning through the Web was "to use analysis not only to reveal structures of domination, but also to effect change in the way power is wielded, maintained, and reproduced in social organizations and relationships" (2004: 2), thus potentially configuring a critical linguistic pedagogy centrally concerned with the role of discourse in social practice (see Fairclough 1992, 2001; 2004: viz. 112-113) and inextricably intertwined with questions of (here, children's) rights and identity.

2.1. The research questions, foci *of interest and outcomes*

The research questions for our analysis stemmed from an interest in exploring/categorizing the strategies children enact in making sense of complex new modes of discourse and discourse genres, namely those they encounter on the Web. More specifically, the main research questions were centered on a systemic-functional approach to intermodal competence (see, for instance, Painter, Martin & Unsworth 2013; Djonov 2007 & 2008) and systematized as follows:

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maintain, and reproduce positions of power through discursive means. […] The intention of CDA is to move the linguistic field into a domain of social and political relevance and, thus, provide a social critique by documenting structures of inequality" (Young & Harrison 2004: 2).

i. Can the students recognize the main topic and participants (Field of discourse) of a website on the grounds of the homepage alone?
ii. What strategies do they use (if any) to retrieve information and identify the text function (or "website mission"), as well as participant role-relationships and attitudes (Tenor of discourse), especially when the image/text/sound interface is not congruent (in Hallidayan terms) or is definitely misleading/ideologically biased?
iii. What are the design elements (Mode of discourse) that facilitate or hinder young user orientation in making sense of the logico-semantic relations and structure of a hypermedia text, namely a website homepage, and consequently evaluate it as "well-organized"/"interesting" or not?

Following the checklists used to identify some basic problematic areas in adult-generated materials and the related barriers to informing and sensitizing young learners to issues of public concern, the present paper focuses on the mismatch between: a) children's inadequate website homepage exploration strategies – e.g. due to the necessity to do more inferencing to decode image-text relations on a webpage than when they use old media (see Martinec 2013: 168 *et passim*) – and b) adults' defective/misfiring materials design strategies – e.g. due to semiotic overload, excessive pictorial density, or misleading visual hierarchy.

In other words, the paper aims to suggest potential solutions to barriers experienced by children as they try to make sense of the selected websites' structure and intermodal meaning-making patterns at different yet integrated meta-functional levels:

- **Ideational**, with particular reference to visual transitivity structures and the resort to grammatical and/or visual metaphors.
- **Interpersonal**, namely as regards structures of agency and responsibility; engagement/disengagement; perceptual salience; axiological and evaluative meanings – or appraisal, for short – through which authors can "present themselves as recognising, answering, ignoring, challenging, rejecting, fending off, anticipating or accommodating actual or potential interlocutors and the value positions they represent" (Martin & White 2005: 2).
- **Textual,** mainly in terms of logico-semantic relations (LSRs), including hierarchy and framing of the various homepage constituents, its (verbo-visual) thematic development, global coherence and local cohesion, the presence of information overload, genre mixing and "minigenres" (cf. Baldry 2011).

The long-term goals of the research are: to foster a better understanding of multimodal literacy development in children of different ages; to promote youth digital citizenship (Jones & Mitchell 2016)[8] through education and ecology of language in fundamental areas of children's well-being, safety and autonomous development; and, ultimately, to identify best practices in adult-child communication thanks to the mediation of peer-to-peer communication and to disseminate general guidelines and empowering packages for multimodal text creation addressed to children to a wide range of relevant stakeholders (parents, educators, etc.), nationally and internationally. Stated differently, if the above-mentioned long-term

[8] Complementing digital literacy education, "digital citizenship education can be focused on using Internet resources to have youth (1) practice respectful and tolerant behaviours toward others and (2) increase civic engagement activities" (Jones & Mitchell 2016: 2065).

goals are achieved, young learners will be provided with remedial strategies for making sense of web-mediated materials, while developing greater autonomy and awareness of their own skills and potentialities, rather than being "acted upon" or, even worse, manipulated in relation to issues which are vital for their own identity formation and the exercising of their "right to speak" with a voice of their own.

2.1.1 Critical Multimodal Awareness, User Agency, Identity Construction and Empowerment Strategies. As Djonov observes:

> Children's websites provide a rich ground for studying hypermedia texts as they epitomize two key challenges for hypermedia designers and discourse analysts. One is understanding what Lemke (2002) terms 'hypermodality', the meaning-making potential of the interaction between the two defining features of hypermedia texts – their hypertextuality and their multimodality […]. [The other] challenge is accounting for the ways in which hypermedia texts achieve complexly interrelated purposes and address different types of users. Most children's websites aim to both educate or inform and entertain children as their overt addressees, and can therefore be described as 'edutainment' or 'infotainment'. At the same time, like most products for children, they seek the approval of parents and educators, their covert audience of adult-censors (2007: 145).

In the course of the analysis, it will be argued that the dual (overt/covert) identity of the intended users of children's websites, as revealed by inconsistencies in website (viz. homepage) design, structure and content organization, partially accounts for most of the barriers experienced by children when they autonomously try to make sense of the websites they are exploring. What is more, it will be shown that young learners do not read all modes as being meaningful: they often seem to rely more on the empirical evidence of the visual mode to make sense of the representations.

Before moving on to data analysis, however, it seems necessary to make reference, albeit cursorily for reasons of space, to the notions of empowerment, identity construction, user agency and autonomy.

These are closely interrelated constructs which substantiate the strong focus of the research on developing young learners' critical multimodal awareness.

To start with, as Page & Czuba warn us (1999), "many have come to view *empowerment*[9] as nothing more than the most recently popular buzz word to be thrown in to make sure old programs get new funding". In its application to management theory, empowerment is often simplistically equated with new approaches capable of delivering higher levels of individual performance. In fact, empowerment as a multidimensional construct must be connected to both individual and organizational and/or community goals: thinking empowerment as an individual endeavor or characteristic (self-empowerment through mind-

[9] A construct developed within the field of community psychology and investigated by M. A. Zimmerman (e.g. 1984, 1990; Peterson & Zimmerman 2004; Zimmerman 2000; Wong, Zimmerman & Parker 2010) in close connection with his notion of resilience (Fergus & Zimmermann 2005).

set and/or knowledge change), or equating empowerment with greater autonomy, self-confidence and efficacy, overlooks the dynamic interplay of the psychological, organizational and sociological components. At the same time, such an oversimplified construal of empowerment, feeds on the misconception that people can be empowered without changing anything in the group/community/organization they are part of; in fact, real empowerment only occurs when the goals and interests of the group/community/organization are taken into due account and the individual is actively engaged in the life of a community. That is why, as opposed to what is the case in management theory, "user agency is cast by cultural theorists as participatory engagement, in contrast to the passive recipients of earlier stages of media culture" (van Dijck 2009: 42).

In what they describe as 'media ecologies', Ito *et al.* analyse as follows the determinants of the broader sociocultural context of youth engagement with digital media:

> The everyday practices of youth, existing structural conditions, infrastructures of place, and technologies are all dynamically interrelated; the meanings, uses, functions, flows, and interconnections in young people's daily lives located in particular settings are also situated within young people's wider media ecologies. […] Similarly we see adults' and kids' cultural worlds as dynamically co-constituted, as are different locations that youth navigate such as school, after-school, home, and online places (Ito *et al*. 2010: 31).

They distinguish genres of participation into two categories: 'friendship driven' and 'interest driven'. These genres of participation are then interpreted as "intertwined with young people's practices, learning, and identity formation within these varied and dynamic media ecologies" (Ito *et al*. 2010: 31).

For our present purposes, identity formation (or better, identity performance) will be referred to, following Tann, as "both the process and product of a discursive formation that presupposes an act of 'identification' by a social actor. It comes into play within a situated discourse to maintain a sense of consistency in the social order constructed through the discourse" (2010: 165). In this perspective, individuals are perceived not as fixed 'end products' but as social phenomena that emerge through processes of social interaction (Davies & Harré 1990: 46). This is all the more relevant in the case of young learners undergoing "education" in the etymological sense of *ex-ducĕre*, i.e. 'bringing to the surface' their own selves (including their goals and aspirations) in relation to the context in which they operate. This educational process is aimed at autonomously fulfilling their own potential for constructing one's identity collaboratively and symmetrically (Cesarini & Regni 1999: 60-64 *et passim*), i.e. embodying Ryley's (2007) conceptions of 'identity as *ethos*' and 'culture as a social knowledge system', whereby knowledge and identity should be constructed in pursuit of common interests, namely protection of one's rights – including the right to self-expression – and respect for the Other.

In strictly communicative and interactional terms, helping young learners to collaboratively develop the meta-semiotic knowledge of the tools, processes and strategies they need to master in new media and ICT-mediated contexts is crucial to enact a pedagogical model fostering empowerment, user agency and, ultimately, learner autonomy. Said differ-

ently, such a pedagogical model can be translated into mastering strategies to recognize/avoid manipulation and to access, and ultimately "own" discourses – i.e. recognize "how people become unconsciously positioned within a discourse" (Fairclough 2001: 236 *et passim*) – and develop greater autonomy in the learning process.

Indeed, as Norris & Jones perceptively point out, "the discursive explanation and attribution of agency within social interaction, is, itself, a cultural tool for the construction of identity" (2005: 170). What is needed, then, is "a systematic model for web genre and web unit analysis, providing a stable, orienting framework through which to study the more volatile and subjective socio-cultural identities found in the Web" (Baldry 2011: 18). By the same token, "the teaching of literacy needs to pay explicit attention to the formation of learner identity" (Erstad *et al.* 2009: 105).

2.2. The "children's rights" sub-corpus: methods and tools for analysis

The websites used with the children were chosen among a larger selection we had previously created and stored on LearnWeb2.0, a social platform developed by Leibniz University (Hannover) for the ACT project. All the materials are institutional ones, specifically designed for children and dealing with children's rights. In order to make sure that they were suitable for the children's age range and level of literacy/proficiency, the materials were previously submitted to their school teachers, who were also asked to fill in a questionnaire with critical observations or suggest some other websites from a list.

The selected materials were then tested on eighty-seven children from grade 3 to 8 in a local school where English is used as the main language of instruction (http://www.the-mills.it/) and most of the teachers are native speakers. The children involved in the study are all Italian, and generally come from socio-culturally privileged backgrounds. Ethics procedures were followed by obtaining parental permissions for all the different phases of the study: first the researchers met the school teachers and the principal in order to explain clearly how the study would be carried out and to negotiate with them which materials would be used; after that, the school principal wrote a letter or met the parents of the children involved to explain the aims and scope of the study. Only at the point did the parents sign the consent form.

The fieldwork, which was carried out in the computer room of the school, was organized as follows: students were initially asked to explore the homepage of the selected website for three minutes without clicking anywhere on the page; after that, they were asked to fill in the first part of a questionnaire[10]. At that point they were allowed to explore the other parts of the website at their will for about ten minutes; finally, the questionnaire was completed. All the questionnaires were filled in individually using pen and paper; all the data gathered were later digitalized and analysed by means of the 'Lime Survey' software program.

The sessions took about one hour per group and some 30% of the students in each class, picked out at random, were subsequently asked to participate in video-recorded semi-structured interviews. For ethics reasons, children were recorded from the back, so their face

[10] The questionnaire is reproduced in the Appendix.

could not be visible. In addition, to preserve anonymity, they were only identified through numbers, never through their real names. The interviews expanded on their questionnaire answers and opinions on the website structure, contents and functions, the interplay of images and verbal text, and the educational and infotainment value of the materials in general. The following section will provide a detailed account of the questionnaire and interview data analysis divided by age group.

3. Classroom activities: questionnaire and interviews

3.1. Grade 3

The study focused primarily on the websites homepage, starting from the assumption that homepages fulfill at least three crucial functions (cf. Krug 2000; Nielsen 2000; Nielsen & Tahir 2002; Reiss 2000):

i. establish the identity and mission of the website;
ii. show visitors its main parts;
iii. reveal how the site is structured and what options for navigation it offers.

As website usability studies make clear, homepages are the 'gateway' for orientation into a website as a whole, and can be compared to the 'hyperthematic shot' or sequence in a film text (e.g. Thibault 2000; Vasta 2001). For this reason, starting an exploration by skipping the homepage (or the main page of a website subsection, for that matter) would be considered a "hypertextual ellipsis" (Djonov 2007: 148) and is likely to produce disorientation and/or lack of motivation. Indeed, "hierarchically well-designed" (Rosenfeld & Morville 1998: 37) webpages always include essential "anchors" (Djonov 2005) or "clusters" (Baldry & Thibault 2006) to the website's main sections and to their mutual relationships – skipping them may make children lose track of the Field and the way the text is structured.

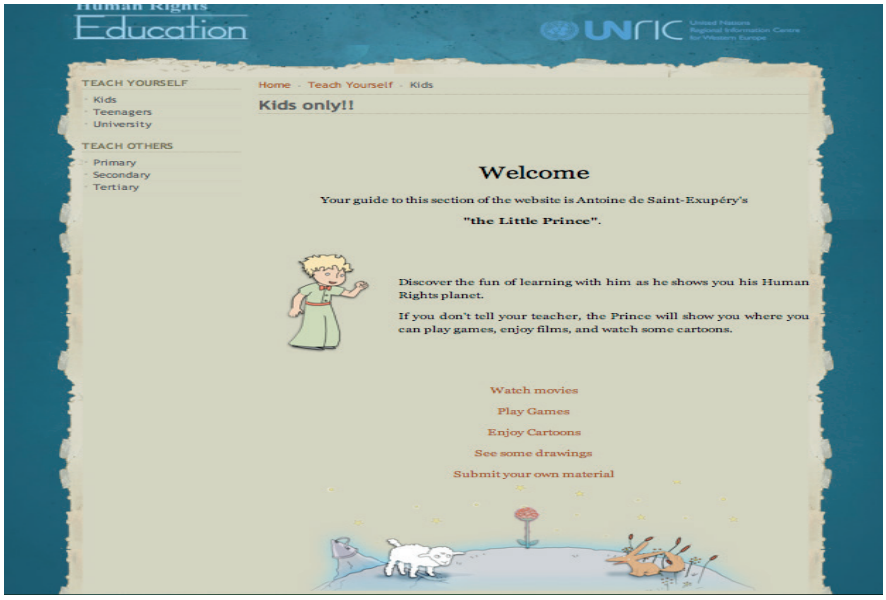

Fig. 1. Homepage of the website www.humanrightseducation.info/

In order to investigate children's competence in recognizing the Field of the website, we asked them to observe the following homepage alone for three minutes without clicking anywhere (they still had the possibility to scroll the mouse up and down) and later answer the question "What is the website about?"

As can be seen in the shot above, the homepage chosen for Grade 3 is characterized by a very simple structure: it displays a low textual density, though it may appear a bit dull and naïve; it is clearly framed and quite consistent in the use of distinct colors indexing "content sections" – i.e. containing information on a given topic or activities of a certain type ("watch movies", "play games", "enjoy cartoons", etc.), as opposed to "functional sections" (informing about the content organization of the website, its sponsor and the institution it represents). The homepage also displays a represented participant (The Little Prince) whom the children are likely to be familiar with: its function or Role in the child's exploration activity is clearly stated (the noun phrase "Your guide" is placed in focal thematic position in the Welcome cluster and it functions as the Identified in the relational process in which "The Little Prince" is the Identifier, visually made salient through bold type and then rankshifted to Given information through reference to the picture on the left-hand side of the page). Moreover, the "mission" of this particular section of the website (which is "for kids only!") is also clearly stated (see "Discover the fun of learning") and, to make learning even more involving, empathy and complicity are established through an attitudinal token of Social sanction (see "If you don't tell your teacher, the Prince will show you…"), as if the playful activity in which The Little Prince is willing to engage the child was to be kept secret.

When the website was chosen, both the experimenters and the teachers predicted there would be no barriers in terms of orientation or Field recognition. However, after three minutes of scrolling the page up and down, most of the children provided a wrong 'Field' answer by stating that the website was about the Little Prince and not about human rights. Indeed, the first question in the questionnaire was: "What is the website about?", and 70.5% of the children answered by referring to the Little Prince and by not making any reference to human rights. In addition, the answer to the second question ("How do you know what it is about?") made it clear that such a mistake was not to be attributed to a lack of attention to the text/image interface or to its verbal component: indeed, 53% of the children pointed out that they retrieved this piece of information from the verbal text itself. Therefore, despite reading the text the children were not able to process and extract relevant information from the hypotactic enhancing clause "as he shows you his Human Rights planet". Because of this, they could not identify the Field of the website.

As a consequence, deeper investigations were carried out during the individual interviews, and it soon became clear that poor understanding was not due to poor reading alone, but was indeed the result of a misleading multimodal design of the page, and of *salience* in particular. On the one hand, children's own exploratory strategies led them to focus their attention and retrieve information only from those parts of the homepage foregrounded through typographical choices (size or bold character), disregarding all the rest. On the other hand, the wrong recognition of the Field by 70.5% of the children, which was evident since they never mentioned 'human rights' in their answers, was triggered by some misleading semiotic choices in design, namely the excessive salience and placement of the only human character on the screen.

A further decoding strategy for Field identification was to be found on the upper left part of the page (Human Rights Planet), however the children seemed to pay almost no attention to the elements outside the main frame, a fact which is related to the general role of *framing* in multimodal texts: childrens' explorations tend to be limited to the elements identified by a frame (a shape, a different color, a box), while all the rest is often disregarded. None of the children who were later interviewed, indeed, had noticed the text on the top left banner, and this also happened with the explorations of other websites in the other grades. Framing in general has a strategic importance for grouping together or separating content and functional elements in any website type, but young learners seem to be more 'sensitive' to it.

In addition to Framing, we were also quite interested in analyzing the role of 'Space proximity': in order to do so, we chose a homepage where visual elements (The Little Prince) and verbal ones (the sentences) were positioned close to each other, which gave us the possibility to investigate whether the association of the Little Prince with the words that designate him as a guide through the website could or could not be perceived as straightforward by the children. After interviewing them, it soon became clear that the two elements were not matched in children's minds, the reason being the lack of a key semiotic convention they would normally expect: a vector of some sort – usually a speech balloon – indeed represents the conventional tool for signaling *projection of locutions or ideas* in multimodal texts, therefore its absence created confusion and misunderstanding. Moreover, speech balloons are generally associated with a first-person narrator, a narrative strategy that favors readers/viewers identification with the characters and generates greater involvement and attention: again, the different choices in design collided with the children's expectations and created misunderstanding in the general recognition of the Field. Finally, children could not understand whether the character is gazing at the viewer or not: in other words, it was not clear whether this had to be interpreted as a picture activating *demands* at the interpersonal level of discourse – or not: a more explicit representation of the Little Prince gazing directly at the viewer, coupled with a first-person narrator in a speech balloon, might therefore have increased children's engagement while raising their degree of attention both for the visual and for the verbal modes (see Kress & van Leeuwen 1996). Because of some inconsistent design choices, in other words, social actors (children), could not pursue what is generally referred to as 'identity formation', a phenomenon which comes into play within a situated discourse to maintain a sense of consistency in the social order constructed through the discourse (see 2.1.1).

3.2. Grades 4 and 5

Disorientation and misunderstanding that originate from the Home Page are the most common barriers that were found with children at all levels, therefore they had the strongest negative consequences for accessibility. The following website was used for grades 4 and 5:

The semiotic space is here shaped into modular structure which clearly separates 'centre' from 'periphery': central parts are generally used to convey crucial information about the website's mission and content, while more peripheral ones normally contain anchors to other internal/external webpages. Here, however, all the information about the website identity is positioned in the bottom left-hand section of the screen (violet bird anchor), therefore it is backgrounded.

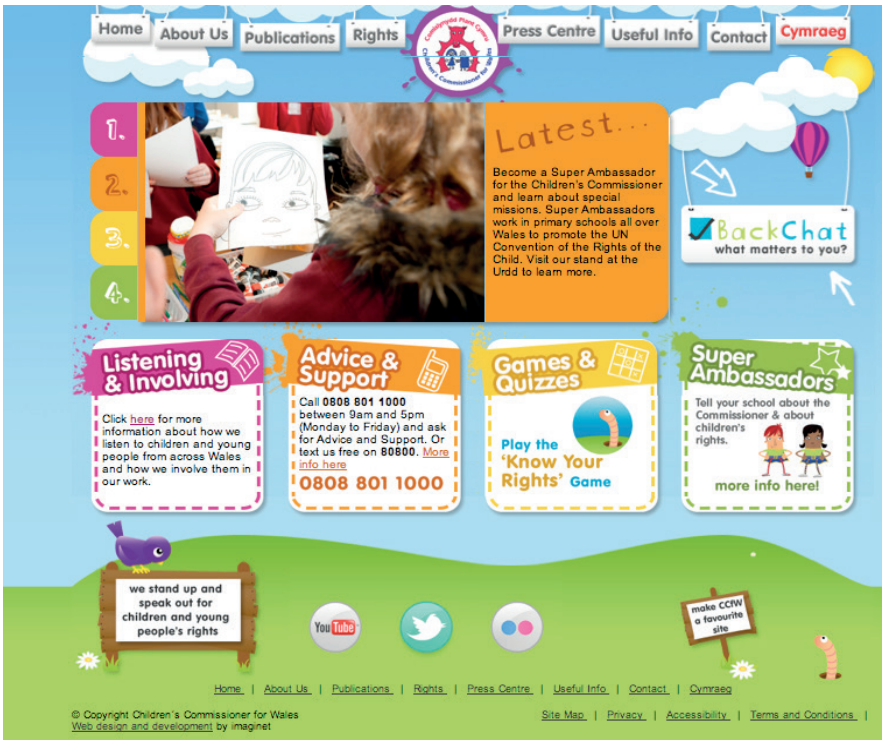

Fig. 2. Homepage of the website www.childcom.org.uk

When asked about the Field of the homepage, 71% percent of the students provided a wrong answer. Indeed, despite being a website about children's rights, most of them provided answers like "it is a website about games" or "it is a website about ambassadors". During the interviews, children made it clear they had not been reading the backgrounded verbal text properly, which is in line with the general tendency to only focus on the visual. The violet bird anchor occurs in each webpage in the same position (in hypermedia terms, an example of *repetition*), however this was not of any help for Field recognition. According to the kids interviewed, suggested changes in design could entail positioning this element more centrally in each webpage and, possibly, make it bigger - thus creating what Djonov (2005: 226) refers to as a logico-semantic relation of the *Elaboration: Reinforcement* type. Children added that this would also make the object look more tangible – therefore closer.

As stated above, in addition to establishing the identity and mission of websites, homepages serve two other main purposes:

– showing visitors their main parts;
– revealing how the site is structured and what options for navigation it offers.

As far as the first one is concerned, children generally found it quite difficult to orient themselves successfully in the website parts; this was mainly due to *chromatic incoherence*, i.e. inconsistency in choices pertaining to *color coding orientation*. What they expected was in fact a relation of *co-referentiality* between the colors of the sections in the vertical row and the boxes below, which sheds lights on children's general development of a *sense of texture*

(cohesion and coherence) holding together multimodal texts. Indeed, the use of colors on this page shows little or no relationship with the contents and functions of the related boxes, which is very misleading when we consider that the colors are precisely the same ones. This is therefore an instance of confusing logico-semantic relations of '*directionality*' (Djonov 2005: 114), generally acknowledged among the most common causes of confusion and disorientation in website architecture, since norms of hierarchy and thematic development are completely flouted. Stated differently, young learners generally found it hard to make sense of these materials, and felt "acted upon", if not 'manipulated' by the confusion and inconsistency in design choices (see 2.1).

As regards the third function of a homepage, students found it quite useful to interact with the anchors at the top of the page, since they enlarged when the mouse was rolled over them. Besides conveying crucial information about the site content, such anchors also emphasize the site's ease of use, thus activating both the ideational and the interpersonal metafunction of language at the same time; users are generally more attracted by elements they can engage with, as these elements make them active agents in the exploration process: in Systemic Functional terms, children become 'Actors doing something', which is also a fundamental element in co-operative learning (Pratt 2003: 27).

Against all expectations, however, 76% of the students found this homepage well organized. A possible reason for this is the massive use of framing within the page, which provides the impression of organization/order/clarity: especially at this age, framing is processed more easily than cohesion and coherence phenomena, and is therefore likely to be confused with 'clarity' and 'ease of navigation'. Students therefore did not grasp the apparent semiotic overload and inconsistency in website design and hierarchy, and experienced the false impression of cohesion and coherence provided by the use of colors and framing.

3.3. Grades 6, 7, 8

Students from Grades 6-7-8 explored the following home page (Fig. 3).

Another modular structure has been deployed, which proved recurrent during our explorations of websites for children. Maximum salience is here ascribed to the "ipod nano" flashing colorfully at the centre of the screen. Interestingly for our analysis, children of different age groups provided very different answers to the question addressing the homepage Field: after scanning the page for three minutes, 70.6% of the children in grade 6 provided a wrong answer, 66.7% percent provided a wrong answer in grade 7, but the percentage decreased dramatically in grade 8 (28.6%). In the wrong answers, children said that the website was about the Apple product ipod nano, without making any reference to human rights (the website was indeed about human rights). In terms of image-text relations processing ability, this discrepancy confirmed the increasing weight and prominence of the verbal dimension in decoding activity (even when it is backgrounded) with the growing of age. Indeed, the only possibility for identifying the topic in the homepage was by reading the "welcome" section positioned above, again in a peripheral position (Fig. 4).

In the general 'semiotic economy' of the page, the salience of such crucial information is indeed very low, due both to typographical and to color choices, especially when compared to the big and colorful image of the ipod nano foregrounded underneath (Fig. 5).

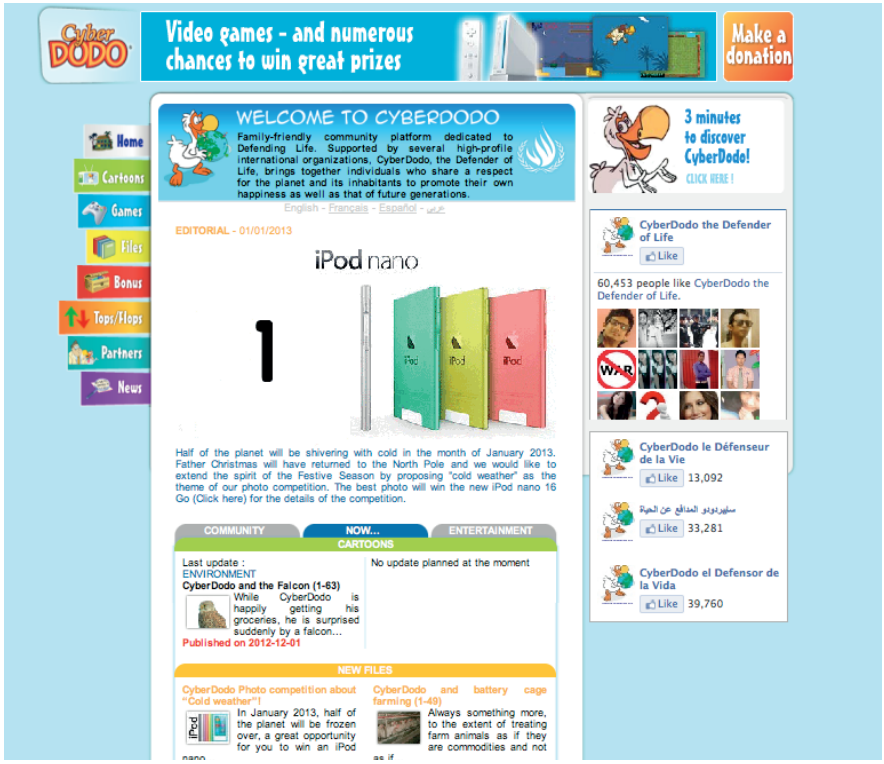

Fig. 3. Homepage of the website http://en.cyberdodo.com

Fig. 4. Top part of the homepage of http://en.cyberdodo.com, http://en.cyberdodo.com

This is probably the reason why 100% of the kids who did not identify the Field, believed that the website was about the iPod nano. Referred to as *visual hierarchy* (Djonov 2005: 130), this choice in design is not rarely ideologically biased: the promotion of a product in a website for children is, indeed, an imposition of models and behavior patterns from hegemonic communities, made even more powerful considering that the kids are totally unaware of that. As anticipated in section 2.1.1, this is even more relevant in the case of young learners undergoing "education", as their educational process is aimed at autonomously fulfilling their own potential for constructing their own identity. Ryley's (2007) conceptions of "identity as *ethos*" and "culture as a social knowledge system", whereby knowledge and identity should be constructed in pursuit of common interests, is therefore totally disregarded here. Moreover, the ipod nano image is repeated in other sections of the website and in bigger size, thus constituting an example of *reinforcement*: it reinforces the possibilities to address users' attention on that particular element.

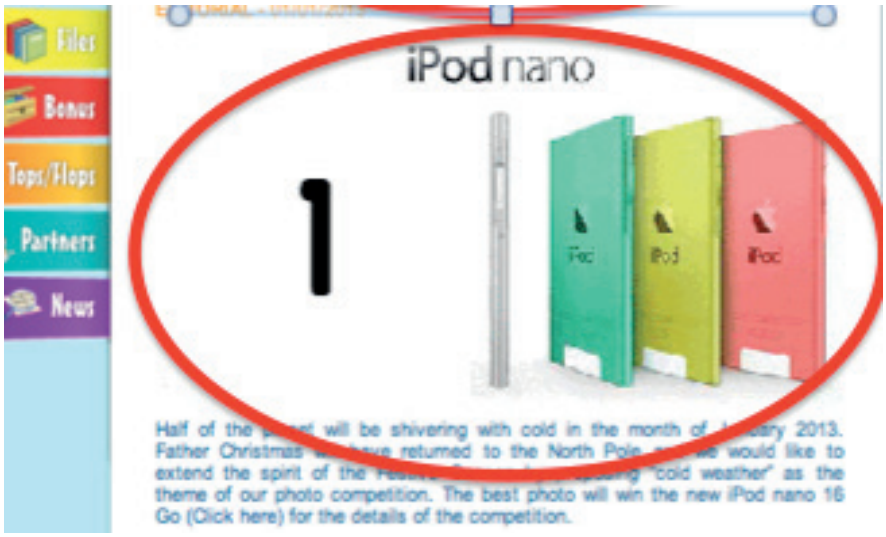

Fig. 5. Central part of the homepage of http://en.cyberdodo.com of http://en.cyberdodo.com http://en.cyberdodo.com

As far as the organization of the homepage is concerned, the feedback children provided showed an opposite trend from grade 6 to grade 8 compared to the question 'What is the website about?': while the understanding of the topic for the same website increases from grade 6 to grade 8, positive opinions about homepage organization tend to decrease (78% in grade 6, 62% in grade 7, 57% in grade 8) with age growth. Again, this confirms that at lower ages well-organization coincides with strong levels of framing, whereas older children from 12 onwards tend to become more aware of other semiotic factors such as *internal coherence*, *hypertextual potential*, *clarity of information*. Occasionally, as our oral interviews made clear, they also seem aware of manipulation attempts by means of commercial advertising: indeed, five children out of eight aged 12 or above told us they thiught it was 'unfair' to use an electronic gadget, in such a foregrounded position, within a website devoted to children's rights.

Not surprisingly, the only question which aligned all the children has to do with methods for evaluating the websites in general: despite their age, and in line with other studies (Lemke 2013; Heins 2017), positive or a negative opinions about a website in general seem to strongly depend on the degree of engagement provided by the games embedded in the websites.

4. Data discussion

4.1. Critical points

The analysis of children's websites explorations has highlighted some criticalities which might create barriers to navigation and, more generally, compromise accessibility. The most common risk that children have experienced is disorientation, the cause of which is twofold: on the one hand, especially younger children were not familiar enough with the medium, on the other hand, most of them, independently of their age, experienced some difficulty in shifting from one semiotic mode to the other(s). and integrating the different semiotic modes. This section focuses on the first point; best practices are outlined in section 4.2.

Children of all grades experienced difficulties in identifying the Field of the website: when asked to refer about webpage topics, most of them provided wrong answers by saying that the websites were about topics not related to human/children's rights; their answers were often elaborated after focusing on the most salient elements only. The main reason for this is to be ascribed to a bad understanding of inter-modal dynamics: indeed, students do not seem to read all modes as being equally meaningful, relying much more on the visual ones for their inferences; especially at lower ages, students tend to disregard the verbal dimension of multimodal texts, thus often missing crucial information for meaning-making. The range of modes that new technologies make available to the users impacts on learning in terms of the 'new' potential for engagement and sign making that these texts mediate, as well as in the construction of what has to be learnt (Jewitt 2008: 116): despite a predominance of the visual, most of the clues to identify the websites Field is often ascribed to the verbal mode, a reason why a high percentage of students gave a wrong answer to the question 'What is the website about?'

Not rarely, verbal parts are 'marginalized' through design choices which mainly focus on the visual dimension: common to students of all ages is, indeed, disorientation due to an excessive focus on framing: when a frame is present, students tend to concentrate exclusively on the elements contained inside it, and disregard all the information 'around'. Frames are generally realized through different colors or through the use of boxes or other shapes, and are used to 'isolate' some elements for many possible reasons. Problems arise when crucial information for Field individuation or for orientation is placed outside the main frame, as was the case with the websites we used and with several edutainment websites we analyzed before fieldwork. Indeed, home pages aim at presenting website content, typically in their main viewing area, which generally excludes both the anchors to the other website sections and the navigation bars or advertising banners.

Moreover, focusing only on the framed elements not rarely poses problems in the identification of users' position within the website, since this piece of information is usually contained on the top bar; failing to identify these elements makes it difficult *both* to experience website fluidity, namely the website's capacity for expandability and change, *and* the ability of hyperlinks to obscure its structure and transcend its boundaries (Djonov 2007: 144). By granting users freedom of movement, the anchors positioned outside the main frame are indispensable for orientation and, ultimately, for the website's attractiveness. A possible reason why a significant number of students declared they did not like the website they had explored might be ascribed to their too rigid exploration of framed elements, with consequent little or no attention to other parts that would prove fundamental for orientation and enjoyment. Framing is also responsible for the students' idea of what a 'well organized' website is: even in cases of inconsistent design, strong framing provided, at least in smaller kids, the idea of order and 'well organization'.

Another crucial key point which emerged from the data analysis is that students of all grades seem to have developed a sense of texture (coherence and cohesion) which they expect to hold together hypermedia texts: even smaller kids seem to have developed a sort of 'multimodal grammar' which they expect to be important for navigation and content interpretation. In case of chromatic incoherence, for instance, students found it quite hard

to orient themselves since they expected a relation of *co-referentiality* (or some other logico-semantic dependency) between the colors of the different sections to be present. Figure 2 above is an interesting example: inconsistency in the designers' choices pertaining to color coding orientation disoriented them, since the use of colors on the page displays little or no relationship with the contents and functions of the related boxes, a fact that students noticed and referred about. In addition, as already clarified above, such inconsistencies also created confusion in the logico-semantic relations of *directionality*, in that norms of hierarchy and thematic development are inevitably flouted.

4.2. Best Practices

It is by now evident that the multimodal character of new technology requires traditional concepts of literacy be reshaped, since what it means to be literate in the digital era of the twenty-first century is different from what was needed previously (Jewitt 2008). This means, on the one hand, promoting children's education and development in fundamental areas like hypermedia texts, which represent the most common types of texts students of all ages deal with nowadays, but on the other hand it also means to identify better practices for multimodal text design, with the aim of making children's accessibility easier.

The following points summarize the observations about text design which were collected during fieldwork with a sample of about 100 children aged 9-14:

- Framing is crucial for children since it provides order and clarity: best practices in design should therefore entail using framing especially with the aim of separating *content* and *functional* sections. Students need to be aware of the specific purpose of the web pages they are exploring, and this also helps them develop better orientation in the website;
- The *logico-semantic* relations among the different web pages should also be made as explicit as possible: it is important that children understand how information is organized in the different sections; in other words it is important that they have access to the *ideational meanings* without obstacles and barriers. The parameters of logico-semantic relations in hypermedia, which have been adapted from Systemic Functional Linguistics – *explicitness, scope, dependency and directionality, recursion, orientation* and *semantic* type (Djonov 2005: 360) – should be signaled in design through the use of consistent hyperlinks and anchors; children, although unaware of the theoretical paradigms at the basis of website construction, can detect design inconsistencies which may result in lack of orientation and meaning processing;
- Although all modes have equal weight in hypermedia texts, not all of them are equally usable for a particular task: some meanings are more easily conveyed by means of images, others by means of verbal texts; the *Little Prince*, for example, is better understood through a visual representation of the character (the *Projector*), while his words (the *Projections*) are communicated through the verbal mode; yet, it would be crucial to employ common design strategies for representing 'projection of locutions, or thoughts', as it normally happens in cartoon bubbles. Children in Grade 3, for example, found it hard to attribute the words on the page to the represented character and felt disoriented; the disconnection between the two modes made it hard for them to recognize the Field of that webpage;

- Salience is crucial for meaning-making at all ages: students' interpretations of the ideational meanings have indeed been strongly influenced by non-consistent salient elements. Most students of grades 6 and 7, for example were mislead by the image of the iPod nano (see Fig. 3), while children's rights were totally disregarded. In other words, an ideologically biased (commercial) choice was imposed by means of salience, and the authentic Field of the page was backgrounded. During the interviews, children made it very clear that they tend to focus most of their attention to salient elements, therefore design choices should be consistent from this point of view;
- Considering the great importance of the visual mode for children, it could be useful – especially for websites targeting lower age groups - to make the written text more visual. There are currently several options for making typeface more readable and enjoyable, encompassing choices in size, color, shape, etc. There are also fonts recommended for children with reading difficulties, see for instance http://www.luzrello.com/DysWebxia.html;
- As regards logico-semantic relations, research demonstrated that the multiplicative nature of meaning-making in hypermedia often disorients children and becomes a barrier to smooth accessibility. As a consequence, especially at lower ages, we believe it would be important to resort to logico-semantic relations of the *elaboration: reinforcement* and *elaboration: clarification* types (Djonov 2005: 232): reinforcement involves occurrences of the same elements (e.g. image or hyperlink anchor) that differ in their representations (e.g. their positions on the webpage, sizes, labels) and reinforce each other's meaning or functionality. This is more than mere repetition, thus it is not boring for children and helps them make sense of the complex relations among the represented elements. Clarification, on the other hand, involves *specifying* or *exemplifying* elements already introduced, and proves very useful to better understand the general information and to provide more concrete *visual* or *verbal* examples of a particular concept;
- Finally, good practices in design should always consider the role 'engaging strategies' play in children's explorations. Some hypertext objects, mainly anchors, icons, small images, have the potential for 'dialogic engagement with the reader' (Baldry & Thibault 2006: 148): while being very appealing by means of their enlarging, self-activating, interacting and animating potential, these elements can also construct dialogic positions – mono or heteroglossic – for their users (Tan 2010: 94), thus influencing them to adopt a certain point of view. Therefore, these multimodal elements are generally perceived as very powerful for influencing children to adopt a certain point of view and to convince them of the merits of a certain brand, strategy, ideal.

5. Conclusions

Starting from the assumption that contemporary conditions of communication and digital technology create the movement of images and ideas in ways that affect how young people learn and interact (Jewitt 2008: 243), and that literacy is therefore increasingly pluralized and multiplied in educational discourses, this study has analyzed children's interactions with hypermedia texts through field work observations, questionnaires and recorded interviews. In doing so, we have tried to contribute to some progress beyond the current state of the art, with the principal aim of fostering a better understanding of children's multimodal literacy development.

By studying children's interactions, we have been able to focus on the barriers they may experience and on the consequent difficulties in accessibility, therefore in the meaning-making process. This has also enabled us to contribute to promoting ecology of verbal and non-verbal communication by suggesting improvements in design choices, closely related to accessibility. In particular, advances may be traced in the following areas:

– Within the field of research into the discursive construction of identity, since we have observed how particular social groups may be privileged (those using/wishing to use ipod nano, for instance) through choices of visual/verbal representation which portray those identities as the truly successful ones; these choices are likely to be made more powerful by the use of interpersonal meanings that exploit emotions and evaluative language that capture children's attention and desires.
– Within the field of hypermedia design, through a series of guidelines (see *supra*, section 4.2) for multimodal text creation aimed at fostering accessibility and promoting children's education in fundamental areas like children's rights. As discussed above, in particular logico-semantic relations between elements in the website seem crucial for children's construction of meaning; a 'grammar of hypermedia text construction' should be the aim, in our view.

Promoting ecology of verbal and non-verbal communication in fundamental areas of children's well-being, safety and education through access to ICT-mediated texts is undoubtedly a challenging and engaging way to foster young learners' identity formation and autonomous empowerment. The latter can only be achieved though critical multimodal awareness conceived of as the process of guiding the learner in the metadiscursive unveiling in the process leading to text interpretation.

In conclusion, helping young learners to collaboratively develop the meta-semiotic knowledge of the tools, processes and strategies they need to master in new media and ICT-mediated contexts is crucial to enact a pedagogical model fostering empowerment, user agency and, ultimately, learner autonomy. Such a pedagogical model can be translated into mastering strategies to recognize/avoid manipulation and to access, and ultimately "own" discourses – i.e. recognize "how people become unconsciously positioned within a discourse" (Fairclough 2001: 236 *et passim*) – thus developing greater autonomy in the learning process. In Bakardjieva's words:

> The Internet can evolve into an inclusive and empowering communication medium if technical and content-related problems are defined and their solutions sought with conscious consideration of the users' perspective and, ideally, with the direct participation of everyday users (Bakardjieva 2005: 195).

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APPENDIX

PRIN PROJECT: *"Consapevolezza multimodale e empowerment dei minori"*

Università di Udine

NOME…..... COGNOME …..... CLASSE …..

QUESTIONARIO BAMBINI SITO WEB

Look at the Homepage for three minutes without clicking anywhere, then answer the following questions:

1. What is the website about?
…..
…..
…..
…..
…..
…..

2. How do you know it?
…..
…..
…..
…..
…..
…..

3. Do you think the Homepage is well organized?

Very well	*Well*	*Not very well*	*Bad*	*I don't know*

4. Which elements attract your attention more? Why?
…..
…..
…..
…..
…..
…..

5. Do you think there are any parts of this page which are not addressed to children? If so, which ones?

….....
….....
….....
….....
….....
….....

6. Are there any elements that let you interact with the website? If so, which ones?

….....
….....
….....
….....
….....
….....

7. What element would you like to click first?

….....
….....
….....
….....
….....
….....

Now explore the website for five minutes, you can click anywhere if you want! We will ask for your opinion afterwards.

8. Did you enjoy the website? (Choose one of the following options):

Very much	*Much*	*It was ok*	*I did not like it*	*I don't know*

Why?

….....
….....
….....
….....
….....
….....

9. Would you like to explore it again in the future?

Yes *No*

Why?

….
….
….
….
….
….

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