Towards a framework for the design of socio-technical environments for intergenerational learning in community settings

Verso un framework per il disegno di ambienti socio-tecnici per l'apprendimento intergenerazionale nelle comunità

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ABSTRACT
This article introduces a reflection and practical insights for the design of intergenerational learning environments for community settings or spaces of border learning: spaces standing mid-way between the formal structures of scholarly institutions and the informal and fluid spaces of interaction characteristic of local communities. The paper is written from a theoretical standpoint informed by experiential education and critical pedagogy, drawing in particular on the insights of John Dewey and Paulo Freire. It focuses on the potential of cyclic models of inquiry for informing the design of socio-technical environments in which intergenerational groups are involved in bi-directional learning practices. A framework for the design of intergenerational learning environments is introduced, and its application is exemplified with data from a participatory content creation project involving two rural communities.

Questo articolo introduce una riflessione e spunti pratici per la progettazione di ambienti di apprendimento intergenerazionale in contesti di comunità o comunque spazi di apprendimento oltre il confine: spazi a metà strada tra le strutture formali delle istituzioni accademiche e gli spazi informali e fluidi di interazione caratteristici delle comunità locali. Il lavoro si è basato, dal punto di vista teorico, dalle idee della formazione esperienziale e la pedagogia critica, attingendo in particolare da John Dewey e Paulo Freire. La ricerca si concentra sul potenziale di modelli ciclici di ricerca basata su progetto come base alla progettazione di ambienti socio-tecnici in cui i gruppi intergenerazionali sono coinvolti in pratiche di apprendimento bidirezionali. Viene introdotto un quadro di riferimento per la progettazione di ambienti di apprendimento intergenerazionale esemplificando i concetti o con i dati di un progetto di creazione partecipata di contenuto culturale, che coinvolge due comunità rurali.

KEYWORDS
Community education, intergenerational learning, lifelong learning, inquiry-based learning, participatory content creation, technology-mediated learning
Educazione a livello di comunità, apprendimento intergenerazionale, apprendimento permanente, apprendimento basato sulla ricerca, creazione partecipata di contenuto, apprendimento mediato da tecnologie.

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Introduction

Some of the most promising developments brought by digital technology to education happen at "the edge of the educational establishment" (Brown, 2005). Developments can include new models, new tools, and new learning spaces that step out of conventional patterns and boundaries. Novelty is not always experienced as a rupture. It can be instantiated as a form of continuity, dwelling on new understandings and applications of established models and practices, or the re-envisioning of spaces and tools to sketch novel teaching-learning scenarios. The blend of digital technologies and experiential education principles can be thought to mark just this kind of continuity in community education. Communities are spaces of experience and spontaneous social interaction. Everyday interactions are accompanied by information exchange, and in some instances become contexts for rich knowledge production episodes, for instance when telling the story of a long-passed communal event. Communities are therefore as well natural places of learning. Yet, learning happens in spontaneous, fragmented and unstructured ways. The ensuing knowledge may be as well unstructured, often tacit, deprived of critical reflection and conscious pursuit. It is on the outline of these fragmented processes and tendencies that novel learning environments can be designed that account for both individual and collective learning needs. In this context, digital technologies can be used to support knowledge production and exchange, augment authorial experiences and provide new platforms for interaction and networking. These environments promise to develop into context-specific and community-driven hubs for lifelong learning, alternative educational spaces that offer possibilities for growth and development that are only superficially or insufficiently afforded by scholarly institutions. Novel learning spaces can encourage individual learning while supporting the community to grow as a collective whole, by strengthening bonds among members, facilitating the expression and circulation of knowledge among different generations, and nurturing well-being and development.

This article engages with these issues and provides a reflection and practical insights for the design of community-based socio-technical learning environments informed by experiential learning tenets. The focus is on local communities tied by a common history and tradition (such as rural communities), and urban neighbourhoods where members engage in social interaction on a regular basis. But these insights may also be applied in spaces of "border learning", standing mid-way between institutionalised education contexts and loose spaces of socialisation in family and neighbourhood settings, such as community technology centres, libraries and youth clubs (Bruce, 2008). The writing is guided by the question: *How can we exploit the potential of digital technology in the design of community-based learning environments that encourage and nourish intergenerational exchange, facilitate explicitation of tacit forms of knowing, and contribute in the long run to building vibrant and resilient communities?* To provide viable answers, the papers proceeds by interpreting the key tenets of experiential education from a design thinking perspective. A framework for the design of intergenerational learning environments is introduced, and its application is exemplified with findings from a participatory content creation project involving two rural communities.

1. Designing socio-technical learning environments around experiential learning tenets

The philosophy of experiential education can be traced back to a simple observation: that by purposeful, directed attention to and reflection upon a practical activity, knowledge emerges. John Dewey, credited with sketching the theoretical bases of experiential education, takes *observation* and *reflection* to be the landmark elements that change an experience into an educational experience (Dewey, 1938). To make space for thoughtful design thinking in an experiential education paradigm, the forthcoming sections analyse the relation between learning and experience as embedded in communal spaces. In particular, they shed light on the fundamental processes by which lived experience may become a fertile ground for nurturing knowledge exchange and learning processes.

1.1. *Learning from experience*

As Dewey (1938) argues, not all experiences are educational. Experiences may be non-educative (with no learning outcomes) or mis-educative (sources of distorted understandings). What does it take, therefore, for an experience to be or become educational? Answers to this question have been brought by studies in experiential education, inquiry-based learning, but also by critical pedagogy (e.g. Freire, 2006), constructionist education theories (e.g. Papert, 1980, 1991), and the situated learning body of theory (Lave and Wenger, 1991). Without attempting for a consonant coverage of all these bodies of theory, the forthcoming part overviews a series of elements and processes that provide the missing link between experience and learning: *inquiry, purpose,* and the triangle *action (creation)-observation-reflection*. These elements and the relations established among them will prove relevant for the design of community-based learning environments.

Inquiry is defined by Dewey (1991) as "the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole". Inquiry is triggered by an unsatisfactory situation. The agent's discontent with present conditions compels her/him to identify a problem, or a mismatch between her/his inner needs and desires on the one hand, and the possibilities offered by the environment, on the other (Bruce and Bishop, 2008). After acknowledging the problem, the agent is compelled to take action to find a solution. The expected result of inquiry is solving the doubt, producing knowledge, or reaching the state called by Dewey "warranted assertibility" (Kaufmann, 1959).

Purposes are "end-views", visions of the consequences likely to occur as a result of taking a certain course of action. If the agent regards these consequences as desirable, purposes can become powerful drivers for action. For Dewey (1938), one of the fundamental tasks of education is to support learners in developing the capacity to formulate purposes and commit to actions that bring desired consequences, resisting and overcoming obstructive impulses. Freire (2006) argues that awareness and goal-setting are crucial elements in the development of critical consciousness (*conscientizaç o*), the ultimate goal of education as theorised in his critical pedagogy writings. Inquiry and goal-setting are intimately connected, as inquiry is the necessary pre-requisite for purposeful action.

The triangle *action-observation-reflection* has been conceptualised in sever-

al theoretical traditions as the landmark pattern of educational experiences. In *Experience and education* (1938), Dewey explains how these particular processes enable the formulation of purposes as end-views from the sublimation of blind impulses: the agent that has acted or is about to take action will 1) observe external conditions, 2) recollect similar experiences, and 3) reflect on them, judging and relating between what has been observed and what has been recollected, so that the likely consequences of action are going to be envisioned.

Constructionist thinkers, notably Seymour Papert, have theorised learning in relation to a particular type of action, *creative action*. Constructionism argues not only that learning is uplifted by acts of creation, but that the process of learning itself is an act of knowledge creation that the student can only perform and control by herself/himself (Papert, 1980, 1991). The educational value of creative acts is concretised in scenarios modelled upon the triangle *action-observation-reflection*. Creative processes will produce tangible or intangible artefacts, which enable agents to observe and reflect on the creative process in relation to its outcomes. Papert (1991) illustrates this approach by his concept of "soap-sculpture math": science education in which students engage actively with the object of learning by applying theories, principles and models to immediate problems, or to guide the development and behaviour of elements in game-like environments. Learning is further reinforced in collaborative contexts, in which creative acts are accompanied by sharing and discussion among peers. According to Papert (1991), learning "happens especially felicitously in a context where the learner is consciously engaged in constructing a *public* entity, whether it's a sand castle on the beach or a theory of the universe" (author's *emphasis)*. Sharing, discussion and negotiation with peers help to solidify knowledge. Creative acts can also inspire and engage the learners by enabling them to relate to the end-result of their work, which can motivate, drive and give coherence to their actions. Therefore creation is potentially a key driver for successful goal-setting and commitment to attaining the goal. The anticipation of a desired creative outcome can motivate and animate the learner, enabling her/him to persevere in her/his action and delay obstructive impulses, what Dewey (1938) reckoned to be an essential function of education.

1.2. *Cyclic models of experiential learning*

When seeking to connect the elements outlined above to the design of learning environments for community settings, there are two aspects to consider: the first is the *continuous* nature of the process linking experiences in an individual's life, as well as those experiences and learning; the second regards the nature of the *knowledge* produced and shared in everyday interactions in community settings.

The continuity of experience is one of the elements that Dewey singled out as a characteristic feature to be accounted for in a theory of experience (1938). *Continuity* refers to the way experiences are connected and associated, so that each new one builds upon and garners significance based on the imprints and internalisation of the preceding one. This continuity makes it opportune to conceive of learning processes not as timelines or chronologies, but as cycles, in which each iteration builds upon the results of the passed learning experience and solidifies knowledge together with finer understandings of experience (Enfield, Schmitt-McQuitty, & Smith, 2007). This is why many experiential learning models are proposed as cyclic iterations, such as *Observation-Recollection-Judgement* (Dewey, 1938), or *Experience-Reflection-Abstraction-Experimentation* (Kolb, 1984).

Some models explicitly relate learning to acts of creation. This focus on creation makes them particularly adapt for the design of technology-enhanced environments, as they provide coordinates for the usage of communication technologies in relation to creative acts. A landmark model is *The Inquiry Cycle*, developed by the Community Informatics Research Center at the University of Illinois at Urbana-Champaign for supporting inquiry-based learning, in particular in communities (Bruce, 2002; Bruce and Bishop, 2008). The Inquiry Cycle advocates the use of creative, hands-on activities coupled with group sharing and discussion as catalysers for learning. The Inquiry Cycle bears five main steps, *Ask-Investigate-Create-Discuss-Reflect*. The creative act is central, yet creation does not necessarily imply that concrete artefacts will be developed. Creation can imply as well the agent-led production of meaning (Bruce and Bishop, 2008: 710-711).

A different perspective to creative activities is given by Paulo Freire (2006: 96-117), who argues that acts of creation can be employed for developing *conscientizaç o*, or critical consciousness, the cornerstone of his liberating pedagogy theory. Freire proposes a process based on *coding* and *decoding*, a cycle in which a life situation is encoded in pictorial representations and decoded through observation and critical reflection. Freire used this method as an emancipatory tool to enable low-literate groups in the rural areas of Brazil to take critical distance, come to grasps with oppressive events in their past life, and break patterns of dependency. Encoding is done by using drawings and pictorial representations with evocative power, which both conceal and reveal emotionally charged situations. This process is dialogic, it involves a second party, an educator who participates in the exploration of people's life context, constructs meaningful codifications of familiar situations, and assists them to interpret and assess them critically. According to Freire, the practice of encoding-decoding coupled with reflection in dialogic settings favours the development of critical thinking and enhanced interpretive abilities.

A second aspect of importance for designing community-based learning environments regards the type of *knowledge* that can be elicited, produced and shared in community interactions. The knowledge naturally produced and transmitted in communities has often been theorized as having a tacit and an explicit dimension. Polanyi (1962: 601) defines tacit knowledge as "what we know but cannot tell". By way of contrast, knowledge that can be articulated and communicated in speech is called interchangeably explicit knowledge (Nonaka et al., 2000), objective knowledge (Ambrosini and Bowman, 2001), or declarative knowledge (Kogut and Zander, 1993). Knowledge production episodes in communities and in traditional learning scenarios, for instance the master-apprentice relationship, are infused with a rich overlay of tacit knowledge. The possibility to convert tacit into explicit knowledge has been the object of research in knowledge management and organisational studies. One landmark model of knowledge conversion is the SECI model for knowledge creation in organisations (Nonaka and Takeuchi, 1995; Nonaka et al., 2000). The model builds on the assumption that organisations are collective entities that create knowledge dynamically and continuously, through action and interaction within the organisation and between the organisation and the environment. The knowledge produced has both tacit and explicit dimensions, yet, the authors argue, it is possible to get hold of and convert tacit to explicit knowledge by capitalising upon naturally occurring processes in the organisation: Socialisation, Externalisation, Combination, and Internalisation. These processes can be structured and streamed in desired directions, so that knowledge creation and conversion cycles are enacted in a purposeful man-

ner. By extension, these processes are also spontaneous occurrences in communities, and can be structured and used to enable a community to constantly grow its knowledge base, convert tacit into explicit knowledge, and create a culture of learning among the members.

1.3. *The Romani Voices project*

Romani Voices was a participatory project that explored the potential of digital technologies as vehicles and platforms for giving voice to minority cultures. 'Voice' was used as an umbrella concept to indicate expression, communication and knowledge production processes, but also emancipation and action-taking for achieving self-designed goals by previously disadvantaged or marginalised groups (Tacchi, 2010; Sabiescu, 2013). The project involved two Romani communities in rural Romania and employed ethnography, participatory action research and participatory design principles to engage members in the co-design of a communication solution that could enable them to achieve locally-defined development goals.

The two Romani communities are located in South-Eastern Romania, Galati county, in the villages of Podoleni and Munteni. Both communities are part of the Romani ethnic minority, yet they belong to different sub-groups. The Roma in the village of Podoleni are part of the assimilated Roma. Since they have given up nomadic lifestyle several hundreds of years ago, they have adopted in time most of the traditions and customs of the Romanian people. The Roma in Munteni, on the other hand, have only been settled at the end of the 1950s. Their nomadic lifestyle and a strong cultural ethos enabled them to maintain a high degree of cultural specificity, so that they appear to be an enclave surrounded by Romanian people, yet abiding by community-centric traditions and moors transmitted from generation to generation. The community maintains specific rules regarding rites of passage (such as weddings), social organization models, rules of conduct, and gender roles. A distinctive feature of this community is that they are semi-nomadic: people travel during the spring and summer in the Romanian countryside, to sell cauldrons and metal products created by themselves (Sabiescu, 2013).

Both communities are marked by poverty and scarce economic possibilities. Some of the Roma in Podoleni earn revenues from construction work, while a smaller number of local people are accomplished musicians. For the others, revenues come sporadically from daywork. The Roma in Munteni are traditional coppersmiths, yet face decreasing demand for their products as cheaper alternatives are becoming widely available. With respect to education, the Roma children can pursue primary and secondary school in both villages. In Podoleni, education was considered by members a value of utmost importance, and some families went through strenuous efforts to send their children in nearby cities for high-school, and, more rarely, university studies. In Munteni, access to education was hindered by various factors and especially the frequent travels, early marriages, and the perceived lack of importance of education beyond basic literacy acquisition when leading a traditional lifestyle (Sabiescu, 2013).

In each community, the project started with an intensive exploration phase. By means of ethnography and participatory action research, local people were involved in exploring and reflecting upon their individual and collective history and present conditions, and envisioning how information technologies could enable them to attain communication goals that were previously out of their

reach. After examining several options and technological platforms, both communities opted for building a website, yet each saw it as a platform for communicating very different messages. The community in Podoleni wanted to use the Internet to create the premises for a dialogue with the majority culture. The Roma in Munteni wanted to give visibility to their traditional metalworking profession, but also speak about their poverty and the scarce possibilities to perform any other work asides coppersmithing.

The website content was produced locally by community members under the facilitation of the field researcher. The design of the content production experience was guided by the Inquiry Cycle (Bruce and Bishop, 2008), which was customized and refined in each community based on continuous assessment. The Inquiry Cycle was used to motion an iterative process by which members documented their traditions, history, and present-day priorities and gradually brought them to life in digital media, contributing to the production of rich multimedia narratives. People used audio recorders, video and photo cameras under the facilitation of the field researcher to gather community stories and testimonials that illustrated traditions, values, as well as issues of collective concern (Sabiescu, 2013). Footage and edited content were visualised in group settings in which discussion and critical reflection were encouraged. In this process content themes were tracked, validated by collective consensus, and used to guide the design of the information architecture for each website. Recordings were edited into short theme-based movies with formats ranging from stories to interviews and short documentary-like accounts. Movies accompanied by transcripts and photographs were mapped on the information architecture and published on the two community websites (www.romanivoices.com).

2. Towards a framework for designing socio-technical environments for intergenerational learning in community settings

This section introduces a framework for the design of learning environments in which several generations of a community can be involved in exploring, documenting and representing in digital media issues of collective relevance and concern. The first part discusses how learning activities can be modelled around cyclic models of experiential learning, and introduces the customized version of the Inquiry Cycle used in the *Romani Voices* project. The second part outlines a series of elements to be considered for structuring and organising learning experiences centred on creative activities. The description is illustrated by vignettes from the *Romani Voices* study.

2.1. *Design process: elaborating on the Inquiry Cycle*

The Inquiry Cycle (Bruce and Bishop, 2008) is an activity design tool that integrates a quintessential synthesis of experiential education and inquiry-based learning tenets. When employed with collectivities, the Inquiry Cycle sets in motion a process in which learning emerges from a series of tightly connected processes:

1. Externalisation and sharing of knowledge, values, interests, and communal issues;
2. Providing acts of expression with a tangible quality by recording, or by de-

signing the act of externalisation as a creative act (through performance, drawing, etc.); *and*

3. Generating awareness and critical distance from the creative product and process by guided observation and reflection.

In *Romani Voices*, the steps in the model and their sequence have been modified to fit the purpose of the on-site activities. The resulting model (Fig. 1) bears five core stages: *inquiry, creation, observation, discussion*, and *reflection*. These five stages constitute into a frame for conceiving learning activities in group settings. The role of each step in relation to learning outcomes is further described below, and illustrated by examples from the *Romani Voices* study.

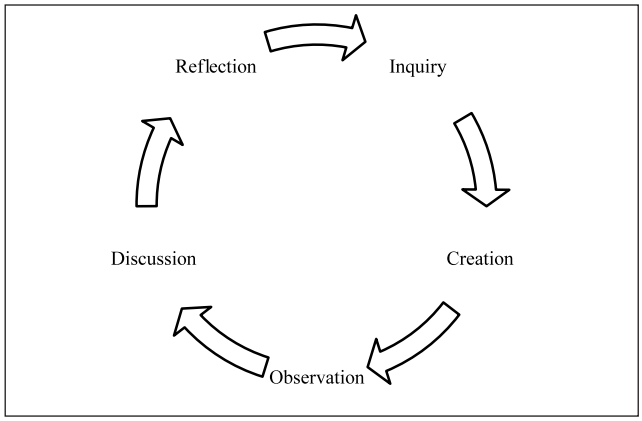


Fig. 1 - The modified version of the Inquiry Cycle employed in the Romani Voices project.
Source: author.

Inquiry refers to digging into a subject, topic, theme or concern aware and actively. Its aim is to surface knowledge, opinions and beliefs that are critically related to a problem posed. Discussion and negotiation in group settings are particularly adapt for framing activities of inquiry, as they may favour the emergence of multiple perspectives and enlarge the pool of understandings on the subjects tackled. In *Romani Voices*, inquiry was used to build a pool of community-relevant themes that were further explored in content production sessions. The format of inquiry activities varied. At times discussions on latest happenings or enduring community concerns brought about interesting subjects to document. These were explored in small groups under the facilitation of the field researcher, in open formats where discussions were guided by active questioning and an evolving agenda. For instance, the subject of *poverty* was examined in several inquiry sessions with different members of the community of Podoleni. These served to bring to surface several layers of this collective concern, spanning causes (lack of job opportunities), effects (unhappiness, scarce resources for keeping children at school, lack of aspirations for the future) and relations with other community core concerns, for instance its bearing on education and well-being. At other times, inquiry was triggered by a record of content themes already drafted in past exercises. By reflecting on these themes, people came to realise what were the underlying roos of collective hardships and problems, or how they embraced together, as a community, certain values such as honesty and respect for the elderly.

Creation refers to pursuing the lead opened by inquiry for creating a communication artefact. The role of creative activities is to confer expression and knowledge with an almost tangible, object-like quality. Creation can involve manipulation of digital media, but can also take the form of verbal or artistic expression, for instance a storytelling event or a theatrical performance. In *Romani Voices*, creation sessions were the marrow of the content production flow. A creation session consisted in the recording (audio, video and through pictures) of a community event, a storytelling session, or an interview. Production sessions were focused on a set of content themes or on a particular event. Many production sessions were held in people's houses and courtyards, in village streets, but also in places where people worked and, in the case of Munteni, in nomadic camps. Most sessions were organized as social gathering events. This lively atmosphere encouraged other community members to join. Some volunteered to tell their stories when a certain theme appealed to them, even if their input was not planned, or proposed other themes that in most cases were accommodated.

Observation refers to critically inspecting the artefacts produced as well as the process leading to their production. The direction of this critical examination is shaped by the goal of a particular initiative, and the learning outcomes envisaged: observation can trigger associations with other stories, beliefs or concerns; it can motion attention to inadvertencies between what has been captured and real life; or it can direct participants back to their inner attitudes, beliefs and opinions on the subjects tackled. The primary purpose of observation sessions is to instill participants with a sense of acute, critical awareness, to equip them with a scrutinizing lens that can be used to examine the process in which they engage and the outcomes generated. In *Romani Voices*, observation was performed during collective screening sessions. The purpose of observation sessions was to gather critical input and comments, but also to enable participants to see the results of the process in which they had been engaged in different roles, from storyteller to content producer. At times, only the people directly involved in producing the footage attended, for instance the storytellers and the content producers. They were encouraged to examine critically the quality of the footage or the editing and make suggestions for improving further recording sessions or perform particular edits. At other times, and especially for edited content, a larger number of community members joined.

Discussion captures the verbal interaction in which meanings and understandings are negotiated in group settings. Discussion can be a means to prompt and direct critical inspection of creative artefacts before, during or immediately after an observation session. In the two field studies, discussion proved particularly valuable for investing observation with a quality of active pursuit, given by verbal interaction in group settings. Therefore discussion sessions were organized in association with screening and visualisation sessions. The discussion was guided by the lead facilitator in the direction fit for the purpose a session served: gather critical input, obtain agreement for publishing, or brainstorm on other subjects to be documented.

Reflection can be conceived as an active thinking engagement with the entire process motioned by previous steps in the cycle and their outcomes, whereby the agent's associated inner thoughts, beliefs, and attitudes are re-considered. The process takes place in the individual mind. In collective settings, reflection can be conceived as a pause for thought where ideas and insights are triggered by the preceding steps in the cycle, and in particular observation and group discussions. In *Romani Voices*, reflection was encouraged by active questioning

during discussions. This was particularly compelling when a community member was involved in first person, as producer or as content provider. Discussions encouraged people to take critical distance, relate their activities to the outcomes achieved, and decide whether the content produced was something they wanted to publish for the wider public.

2.2. *Design elements*

The enactment of the cycle in a particular context will depend on the peculiar characteristics of the community involved and the core purpose of the experience. Its application can be facilitated by considering a series of aspects, and in particular: *the collective purpose, learning outcomes, content, roles, tools,* and *time*.

Collective purpose

The purpose of an inquiry-based learning experience can be seen as an 'end-view' of the consequences likely to occur by engaging in a certain course of action (Dewey, 1938). In group-based learning activities, having a clear purpose contributes to providing coherence, consistency and direction to group efforts. The collective purpose is not merely to be communicated, but forged, negotiated and refined by members. Depending on a community's specific priorities, grand purposes can be envisioned that regard the community as a whole, or a definite segment of it, such as youth or children. Envisioned purposes may be focused on knowledge production, but also on intangible outcomes. For instance, a community may want to gain agency for political action, cope with trauma in the aftermath of violent historical events, or come to grasps with discrimination and stigmatisation. When the focus is on creative acts, the purpose can also be conceived as a concrete vision of the end product, which will give participants a sense of what they are going to achieve through their efforts.

The purpose has to have immediate and inherent relevance for participants. For instance, in *Romani Voices* the purpose was negotiated during several months, until it was articulated in a way that was agreed by community members. The envisioned outcome was a community website in both settings, yet the role of the website was conceived differently. In Munteni, the main purpose was to communicate to the non-Roma the struggles and difficulties encountered by the community caught at the edge between traditional living marked by nomadism, the centrality of their metalworking profession as the only source of revenue, and the declining demand for the metal products they tried to sell during their travels. In Podoleni, the community website was seen as a gateway for community expression, from traditions in which local people took pride, such as music, to present-day concerns, such as poverty. In its final form, the website was to become a business card for the community, a means for presenting and communicating itself to the outside.

Learning outcomes

The definition of the learning outcomes needs not be reduced to traditional notions of knowledge and skills acquisition. Learning to be, awareness-raising, acquisition of critical thinking capacities and abilities to engage in productive enquiry (Brown, 2005) are possible learning outcomes that may be associated with a particular experience. The learning outcomes can be structured for the collectivity, for different groups (e.g. based on age or interests) or for individuals. In initiatives pursuing knowledge exchanges among generations, the learning out-

comes may be different for different generations. For instance, the younger generation may set out to understand and learn about the historical past of the community, while the elderly may pursue acquisition of digital literacy skills. These goals can be met through the design of learning experiences that involve knowledge exchanges modelled around digital media production.

Content

The content, or subject matter, may be circumscribed to the subjective world of individual participants, encompassing feelings, memories, impressions and ideas, but also to collective knowledge, issues and priorities. What makes the content in a collective learning experience depends on the purpose set and the learning outcomes pursued. One important aspect is that the subject matter should not be pre-imposed, but emerge in dialogue with learners. Rather than a given, the subject matter is *discovered* through inquiry. Several rounds of inquiry may make the subject matter evolve in directions impossible to foresee at the start of an experience.

Community history	The wedding
Deportation to Bug	The baptism
The forced settlement in the 1950s	Poverty
Religion	Lack of work places
The church	Lack of housing sites
Christian faith	Traditional professions
Christian conversion	Child education
Miracles of faith	Life on the road
Romani identity	Discrimination
Romani traditions	Child discrimination in school
Cultural events	

Table 1 - Provisional list of content themes half-way through the content production experience. Romani Voices study, Munteni. Source: author.

In *Romani Voices* the subject matter for the content production experience was not pre-defined. Content themes emerged, changed, and were refined in the on-going process of content production. As people discussed about relevant subjects, produced content about these, and visualised this content, new aspects to explore emerged. For instance, for the community in Munteni it took time to understand which were the most crucial aspects to document, and what they really wanted to communicate to a public audience. From a rich set of themes (Table 1) emerging half-way through the content production timeline, towards the end of the experience it became more clear that people wanted to focus on three main themes: their coppersmithing traditional profession, the semi-nomadic lifestyle, and the difficult life conditions. Production sessions started to be intensively focused on these three themes. People felt compelled to speak about how poverty affected them, what they lacked, and how they hoped to escape poverty and lead a decent life. Stories about people's life on the road were focused on the hardships entailed by living in tents for many months, travelling around with small children, and the effects on people's lives and on the life per-

spectives and education of their children. Cauldron-making was the subject that caused the greatest enthusiasm in the master coppersmiths. Stories were told about cauldron-making as tradition and as profession, and highlighted the masters' skills and the quality of the products made. People also hoped that they could use the community website to spread awareness of the existence and quality of their products and in the long run boost sales.

Roles

In collective learning experiences, the traditional roles of 'teacher' and 'learner' are likely to be obscured and absorbed into others, as required by the specific type of activity enacted. The teacher and learner may be not be apparent even in the case of rich knowledge production episodes. Let us take, for instance, the case of storytelling-intensive content production experiences. It is likely that roles in content production will be filled depending on interests and prior knowledge and skills. For instance, storytelling may involve a storyteller, a person eliciting the story, and one recording it. Not all people will be invested with each role. Yet as long as they are drawing on communal knowledge, they are equal shareholders and observers of what is being externalized and represented, and it is this concerted effort that contributes to generating knowledge. In this case, each participant will be at the same time a teacher and a learner, a hybrid role that reflects the equalitarian pedagogical relationship promoted by Paulo Freire's critical or liberating pedagogy (Freire, 2006). In *Romani Voices,* people involved could fill two roles: providers of stories and testimonials, and content producers. The distribution of people for these roles was done on the basis of interests, knowledge and skills. The youth typically filled content production roles. In both communities, content production teams emerged by local initiative and remained usually stable throughout the project course. The storytellers were involved on the basis of their capacity to cover one or more of the main subject areas defined in the communication vision. If *poverty* was the main subject treated, for instance, the storyteller could be a mother who encountered difficulties in keeping her child in school, as well as an elderly who struggled to make ends meet.

Tools

A variety of tools can be used to support each step in the Inquiry Cycle. Digital technologies are particularly useful for supporting creative activities, as well as sharing and communication among participants. Without attempting to cover the variety of technological options for supporting these activities, two points can be mentioned in this respect. First, as Freire has argued, it is opportune to select and use technologies cultivating a human-centric rather than a techno-centric approach (Freire, 1973; Kahn and Kellner, 2007), considering the effects on the community in the long term. Second, wherever possible technology devices already owned and used in the community can be employed in creative ways. Media options range from devices owned by people, such as mobile phones, to computers in community multimedia centres and libraries, to photo and video cameras.

Time

Inquiry cycles can be accommodated in a day experience, or be spread across many months. Their value resides in the continuity of such experiences: each new iteration of the cycle contributes to solidifying knowledge, and motions attention to new knowledge instances. The sequence of steps needs not be fol-

lowed in a rigid manner. Steps are often combined, for instance observation may twin discussion and reflection sessions, or creative acts may be coupled with discussion. In *Romani Voices*, the project activities were spread along 27 months in Podoleni, and 23 months in Munteni. More than half of this time was dedicated to content production. During these months, the steps in the cycle were enacted continuously, in two formats: collective production sessions (with the assistance of the lead facilitator) and community-managed sessions (managed by local people by their own initiative). Collective sessions were 2-3 weeks long, and alternated every 6-8 weeks with community-led sessions. The precise format and sequence of sessions were not rigidly structured. At times creation activities were pursued intensively, while at others frequent visualisations of footage and edited content were organised. Community-led production sessions were particularly flexible. When local people were in charge, they were often inspired to produce multimedia content triggered by events and happenings in the community, without going through the precise steps of the Inquiry Cycle.

2.3. *A community-centric and relational perspective*

The elements outlined above have been singled out as pointers for guiding the design of community-based learning experiences modelled around cyclic models of inquiry. Of equal importance is the stance taken in approaching and enacting them. In this respect, this article argues for a relational and a community-centric perspective. *A relational perspective* calls attention to the way the elements are related, and the mutual determination among these, so that the definition of each element is likely to affect the definition of the others. For instance, agreement over a collective purpose is likely to affect the definition of the learning outcomes and the learning content. In a *community-centric perspective,* the broader and long-term impacts of learning experiences are formulated by focusing on the collectivity, rather than the individual. Setting up this type of experiences is not about creating media artefacts, nor about disparate learning episodes, but about building community capacity for those aspects that a community itself prioritizes, whether it is about coming to grasps with discrimination, building agency for political action, or boosting media literacy levels. In this respect, a series of aspects can be reinforced:

A first correlative regards the *flexibility* of the framework introduced. Each step in the Inquiry Cycle calls for and is related to the others in a seamless manner. At the same time, these steps can be customized to respond to specific contextual constraints and opportunities. New steps in the cycle may be added or subtracted any time during the timeline of a learning experience. Enactment is about experimentation and continuous adaptation, enabled by a continuous observation and reflection on how the experience progresses. In *Romani voices,* the 5-stepped Inquiry Cycle was complemented with a *Planning* component in both communities, to make it possible for intensive 2-weeks production sessions to be iterated across many months without losing track of the process. In Munteni, several content production hubs were accommodated. To update all participants on progresses outside their production hub, a *Progress overview* step was added to the cycle (Sabiescu, 2013). These examples show that the model is not a rigid tool, but one open for experimentation and change as required by the local context and the constraints of the initiative run.

Second, a community-centric perspective may ask for a critical look at the *evolving interplay among people and technology*. The development of complex

relationships between people and technology in time may run the risk of unwarranted changes in communities. Ivan Illich (1973) cautions against the inversion of means-ends relations when it comes to using technology, which may subjugate people by stimulating an endless expansion of new needs and desires that are never fully gratified (Kahn and Kellner, 2007). Freire's notion of 'ethnotechnology' hints at the importance of subsuming technological uses to the purposes held by educational programs, and in particular to the development of *conscientizaç o* (Ibid.). and the pursuit of individual and collective freedom.

Third, relations among people, and *tensions between the individual and the collective* may become apparent in the application of the framework. A community-centric perspective implies that sight of the collectivity should not be lost even when individual learning outcomes are considered. This stance is not to be taken as a constraint, but rather as an opportunity. For instance, such a vision can help identify ways by which individual learning may be best pursued by capitalising upon existing communal assets, practices, and relations. An example is the design of media literacy programmes for adults through the involvement of younger media literate generations, devising scenarios in which bi-directional knowledge exchange processes are accommodated.

Conclusion

This article provided a reflection on the design of socio-technical environments for intergenerational learning embedded in local communities, and drawing on collective knowledge pools and existing interaction practices among members. It argued that the design of such environments can be framed by experiential learning tenets, and singled out a series of design elements prone to foster bridges between experiential and learning realms in purposeful, structured ways. On these premises, a framework for the design of technology-mediated intergenerational learning environments was introduced. Rather than a recipe, this framework was provided as an exemplar of how experiential learning tenets can be elaborated from a design perspective and used to set in motion learning experiences designed with and for local communities.

There was an underlying assumption, running through this article, that by persevering in the enactment of these learning experiences as part of long-term community education initiatives, the impetus will be created for the creation of alternative pedagogical spaces, with aims, methods and approaches that fit members' needs for education. The pursuit of learning in these spaces may complement that of formal educational establishments, and fill the needs for lifelong learning that cannot be accommodated by the latter. Yet, the full potential of these learning environments is to be achieved by a shift from singular instances and projects in isolated places to continuous processes linking learners and communities across time and space, and therefore moving from learning environments to learning networks. This perspective is in need for its own theoretical grounding, with sensitivity to how learning and in particular intergenerational learning is pursued differently at the crossroads between formal and informal education settings (Margiotta, 2013). This calls for future research, particularly design-based research in community education, which can capitalise upon the possibilities opened up by information technologies for nurturing learning within and across community spaces, and use these insights for informing a grounded body of related theory.

References

Ambrosini, V., and Bowman, C. (2001). Tacit knowledge: Some suggestions for operationalization. *Journal of Management studies,* 38(6), September 2001, pp. 811-829.

Brown, J. S. (2006). New learning environments for the 21st century: Exploring the edge. *Change: The magazine of higher learning,* 38(5), pp. 18-24.

Bruce, B. C. (2008). Learning at the border: How young people use new media for community action and personal growth. *Proceedings of the 6th Panhellenic Conference with International Participation: Information and Communication Technologies in Education (HICTE), (*pp. 3-10*)*. Nicosia, Cyprus: Department of Education, University of Cyprus.

Bruce, B. C., and Bishop, A. P. (2008). New literacies and community inquiry. In J. Coiro, M. Knobel, C. Lankshear and D. Leu (Eds.) *The handbook of research in new literacies* (pp. 703-746). Hillsdale, NJ: Erlbaum.

Bruce, B. C. (2002). New technologies and social change: Learning in the global cyberage. In L. Bresler and A. Ardichvili (Eds.), *Research in international education: experience, theory, and practice* (pp. 171–190). New York: Peter Lang.

Dewey, J. (1938). *Experience and education*. New York: The Macmillan Company.

Dewey, J. (1991). Logic: The theory of inquiry. In J. A. Boydston (Ed.), *John Dewey: The later works, 1925–1953* (Vol. 12, pp. XX–XX). Carbondale: Southern Illinois University Press.

Enfield, R. P., Schmitt-McQuitty, L., and Smith, M. H. (2007). The development and evaluation of experiential learning workshops for 4-H volunteers. *Journal of Extension,* 45(1), pp. 1-9.

Freire, P. (1973). *Education for Critical Consciousness*. New York: Continuum.

Freire, P. (2006). *Pedagogy of the Oppressed*. New York: Continuum.

Kahn, R., and Kellner, D. (2007). Paulo Freire and Ivan Illich: Technology, politics and the reconstruction of education. *Policy Futures in Education*, 5(4), pp. 431-448.

Kaufmann, F. (1959). John Dewey's Theory of Inquiry. *The Journal of Philosophy,* 56(21), pp. 826-836.

Kogut, B., and Zander, U. (1993). Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies*, 24 (4), pp. 625–645.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.

Illich, I. (1973). *Tools for Conviviality.* New York: Harper & Row.

Lave, J., and Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge, MA: Cambridge University Press.

Margiotta, U. (2013). Shaping to look – Intergenerational learning and education. In U. Margiotta, J. Raffaghelli, E. Saulescu and R. Icleanu (Eds.) *Proceedings of the International Conference 'Transforming the Educational Relationship: Intergenerational and Family Learning for the Lifelong Learning Society'.* Bucharest, Romania, 24-25 Oct. 2013.

Nonaka, I., and Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press.

Nonaka, I., Toyama, R., and Konno, N. (2000). *SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation*. Long Range Planning, 33(2000), pp. 5-34.

Papert, S. (1980). *Mindstorms: Children, computers, and powerful ideas.* New York: Basic Books.

Papert, S. (1991). Situating constructionism. In I. Harel and S. Papert (Eds.), *Constructionism* (pp. 1–11). Norwood, NJ: Ablex.

Polanyi, M. (1962). Tacit Knowing: Its Bearing on Some Problems of Philosophy. *Reviews of Modern Physics,* 34 (4), pp. 601-616.

Sabiescu, A. G. (2013). *Empowering Minority Voices*. Ph.D. dissertation, Faculty of Communication Sciences, Università della Svizzera italiana, Switzerland.

Tacchi, J. (2010). Open content creation: the issues of voice and the challenges of listening. In *Proceedings, Open Development: Technological, Organizational and Social Innovations Transforming the Developing World* (Ottawa, 6-7 May 2010).