

Combining Capabilities and Fundamental Human Needs: A Case Study with Vulnerable Teenagers in France

Jerome Pelenc¹

Accepted: 22 June 2016 / Published online: 9 July 2016
© Springer Science+Business Media Dordrecht 2016

Abstract In the field of human development few studies attempted to combine the capability approach originally developed by Amartya Sen and the fundamental human needs approach developed by Manfred Max-Neef. The goal of this paper is to combine the two approaches in order to build a dynamic and multidimensional framework of human well-being. This framework enables a better description and assessment of the complexity of human well-being ranging from freedom of choice to needs satisfaction. To test this framework we conducted an action-research project with vulnerable teenagers who suffer severe social exclusion and educational difficulties. In order to assess subjective well-being inequalities, we organized participatory workshops followed by a questionnaire survey with the vulnerable group and with a control group. The results clearly demonstrate that the group of vulnerable teenagers suffers inequalities on almost all the dimensions of well-being that we tested. In sum, the theoretical reflections and the operationalization of the combined framework enables us (i) to better define and link the different concepts of capabilities, functionings, satisfiers and needs; (ii) to debate further the idea of a universal list of human well-being dimensions; (iii) to discuss the risk of aspirations adaptation of vulnerable students; (iv) to discuss the potential of needs and capabilities for improving education in a human development perspective; (v) to offer a matrix compounded of ten axiological capabilities and four existential capabilities; and (vi) to formulate a new definition of sustainable human development that reconciles needs and capabilities.

Keywords Capabilities · Fundamental human needs · Well-being · Inequalities · Education · Participatory methods

✉ Jerome Pelenc
jerome.pelenc@ulb.ac.be

¹ Fonds de la Recherche Scientifique (FRS-FNRS), Centre for Studies on Sustainable Development (CEDD)/Institute for Environmental Management and Land-use Planning (IGEAT), Université Libre de Bruxelles (ULB), IGEAT (cp130/03) 50 avenue FD Roosevelt, 1050 Brussels, Belgium

1 Introduction

Only a few works (Cruz 2006; Rauschmayer et al. 2011) have tried to establish bridges between the capability approach (noted CA) originally developed by Sen (1992, 1999, 2009 among others) and the fundamental human needs approach (noted FHN) developed by Max-Neef (1991). However, one could say that Sen and Max-Neef pursued a similar goal by developing an alternative to the monetary and utilitarian well-being assessment framework of neoclassical economics (Cruz 2006; Guillen-Royo 2015; Gough 2015), even though their respective analytical frameworks differ. We argue here that combining these two approaches could provide an improved framework for a better understanding of human well-being (noted HWB), ranging from freedom of choice to the satisfaction of human needs. According to Cruz et al. (2009), Max-Neef's conceptualization of needs and satisfiers might be of good help to further guide capability-operationalization methodologies. Gough (2015, p. 21) states it even more straightforward: "In a nutshell, the capability approach needs the underpinning of a rigorous theory of human needs." Consequently, a combination between the CA and FHN seems very promising for improving our understanding of HWB.

The goal of this paper is twofold. First, we investigate the possibility of combining the two approaches to build a unique integrated framework for the assessment of HWB in a multidimensional and dynamic perspective. Second, we undertake the operationalization of this integrated framework regarding young people's well-being, education and empowerment.

Within the CA literature, the topic of education and young people's well-being has already been widely explored (just to cite few works; Walker and Unterhalter 2007; Otto and Ziegler 2010; Biggeri et al. 2011; Hart 2012; Schweiger and Graf 2015). According to Biggeri and Santi (2012), from a CA perspective, children are social actors who are endowed with agency and autonomy (according to their maturity) and are able to express their points of view and priorities. Children from different backgrounds and contexts are independently able to conceptualize relevant capabilities (Biggeri 2007). Several lists of young people's capabilities have already been established (see for examples Biggeri et al. 2006; van Ootegem and Verhofstadt 2012; Wüst and Volkert 2012; Trani et al. 2013). However, as far as we know, none of the work already achieved within the CA has tried to connect with the FHN approach regarding children or young people's well-being, empowerment and education.

In order to demonstrate the relevance of combining the CA and FHN, we conducted a participatory action research with vulnerable teenagers (15–17 years old) living in the suburbs of Paris (Dammarié-les-Lys, France). These teenagers suffer from severe social exclusion and educational difficulties. We then implemented a questionnaire survey for the vulnerable groups and a control group in order to assess subjective well-being inequalities. Building on our results we discuss the tensions that exist between individual abilities and the social context of opportunities within which the vulnerable teenagers live. We also discuss the possibility of linking capabilities and needs to improve education from a human development perspective.

The paper is structured as follows: Sect. 2 presents the main features of the CA and FHN, differences and complementarities. We then discuss the possibility of combining them into a unique framework. Section 3 presents the particular method we developed to set up a series of participatory workshops and then a small-scale survey. Section 4 presents the results of both the workshops and the survey. Section 5 concludes the paper by

discussing two points: (i) the risk of adaption of aspiration of vulnerable students and how looking at education in a human development perspective can help to empower them; and (ii) the possibility of building a matrix of ten capabilities.

2 Capabilities and Fundamental Human Needs: In Search of Possible Complementarities

In this section we briefly present the CA's main features regarding well-being assessment. Then, we introduce the fundamental human needs (FHN) approach. Finally, we discuss the possibilities for combining these two approaches.

2.1 The Capability Approach¹

The CA is an attempt to renew the assessment of human well-being in a manner that can stand up to utilitarian and resourcist approaches. Indeed, in the CA, well-being has to be assessed in terms of the freedoms and opportunities “to be” and “to do” what people have reason to value (Sen 1999). Thus, human development is defined as the process of extending the real freedoms that people enjoy, i.e. enhancing people's capabilities (ibid). Capabilities correspond to the various options that a person can choose, according to his or her values, in order to achieve expected life-styles. Capabilities are composed of a bundle of achievable functionings. Functionings can be elementary, i.e. related to nutrition, health, life expectancy, or more complex, such as taking part in the life of a community and having self-respect (Sen 1999). Hence the CA, and more generally, human development, is multidimensional, with a focus on the intrinsic importance of various aspects of quality of life rather than the accumulation of goods (see among others Sen 1999; Alkire 2002; Robeyns 2005) (Fig. 1).

As the figure shows, a person's capabilities set depends on his or her access to resources (here resources should be understood in a broad sense and cover a large variety of endowments, such as manufactured goods and services, but also non-material goods, such as human and social capital, rights, etc.) and on his or her conversion factors. A person's capacity to convert resources into functionings relies on personal conversion factors (physical and psychological characteristics, etc.), social conversion factors (institutions, customs, public goods, gender, role, etc.) and environmental conditions (changes affecting climate, river flow, etc.; Robeyns 2005). Therefore, the CA does not only take into account the resources to which people have access, but the broader context that allows them to transform these resources into well-being achievements. It is important to note that the capability concept operates via a notion of freedom (i.e. positive freedom) that encompasses both potential choices (i.e. the set of achievable functionings) and realized choices (the set of chosen and achieved functionings). By making a difference between potential functionings and achieved functionings, it is possible to highlight a person's range of choices. Thus, from a CA perspective, poverty can be conceived as a lack of life choices. In sum, the CA sheds light on the parameters that condition the freedom of a given person or group to achieve well-being. These parameters are presented in Table 1.

¹ As the capability approach has been already discussed in this journal we just present its main features regarding well-being assessment. For further details see Sen (1999, 2009), Robeyns (2005) and for a complete review of human development see Alkire (2010).

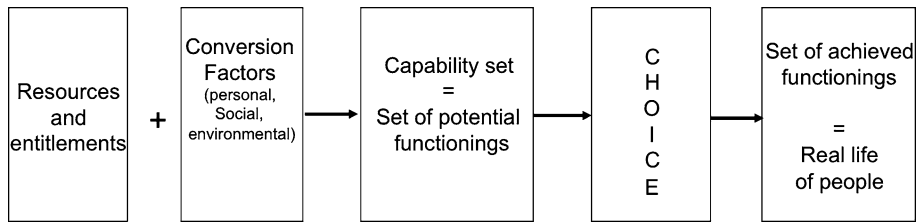


Fig. 1 The basic sequence of the capability approach (adapted from Robeyns 2005 and Bonvin and Farvaque 2008)

Table 1 Proposed non-exhaustive list of parameters that determine the agency of an individual or collective agent (adapted from Pelenc et al. 2015; Pelenc 2014)

Parameters	Examples	References
Natural resources and ecosystem services	Ecosystem services delivered by natural capital: provisioning, regulating and cultural services	MEA (2005) and many others
Resources (material and non-material goods and services)	All kinds of goods and services that are of interest to people, e.g. commodities, income, tools, manufactured and financial capital, loans, time, etc. Human capital, personal experience, know-how, etc. Social capital	Sen (1999), Robeyns (2005), Bonvin and Farvaque (2008) Lehtonen (2004), Ballet et al. (2005)
Entitlements and rights	All legal rights, exchange rights, human rights, political entitlements, freedom of association, land entitlements, property rights, social and economic rights, etc.	Sen (1999), Nussbaum (2003), Bonvin and Farvaque (2008)
Internal conversion factors	Mental and physical Health, personal skills, gender, disability, etc.	Sen (1999), Robeyns (2005), Dubois and Trani (2009), Pick and Sirkin (2010)
External conversion factors	Social, political/institutional, cultural, economic contexts (public infrastructures, public policies, institutions, markets, social and religious norms and customs, discriminating practices, gender roles, societal hierarchies, power relationships, etc.) Environmental conditions (local climate, geomorphological conditions, etc.)	Sen (1999), Robeyns (2005), Bonvin and Farvaque (2008) Sen (1999), Polishchuk and Rauschmayer (2012)
Values, motivations, ethical norms, etc.	Ethics and responsibility for the well-being of others Social influences on decision making and personal history and psychology Values, strategies (especially regarding sustainable development) Personal and social norms	Ballet et al. (2005, 2007, 2013), Pelenc et al. (2013) Robeyns (2005) Rauschmayer et al. (2011) Schäpke and Rauschmayer (2014)

The parameters listed in the above table will help us to characterize the barriers that constraints vulnerable students' agency impeding them to adequately satisfy their needs (see Table 5 in Sect. 4.1.2).

2.2 The Fundamental Human Needs Approach (FHN)²

First of all, it is necessary to differentiate the FHN approach developed by Max-Neef (1991) from the so called 'basic needs' approach. The basic needs approach was associated with the idea of considering poor people as 'patients' awaiting aid and has been strongly criticized for being too paternalistic.³ Sen strongly critiqued the needs approach (1999, 2009)⁴ and he precisely developed the CA to promote the idea of poor people as being agents of their own development. But Max-Neef's conception of needs is clearly different from that of the basic needs. He noticed the following problem: "A prevalent shortcoming in the existing literature and discussions about human needs is that the fundamental difference between needs and satisfiers of those needs is either not made explicit or is overlooked."⁵ As Max-Neef (1991, p. 17) explained: "...it follows that, food and shelter, for example, must not be seen as needs but as satisfiers of the fundamental need for Subsistence. In much the same way, education (either formal or informal), study, investigation, early stimulation and meditation are satisfiers of the need for Understanding." In addition, Max-Neef explains that fundamental human needs can be seen as both deprivation and potential: "...to the degree that needs engage, motivate and mobilize people, they are potential and eventually may become a resource. For example, the need to participate is potential for participation and so on" (Max-Neef 1992, p. 201).⁶

Finally, the FHN suggests that improvements in quality of life depend on the ability of individuals and groups to adequately satisfy their needs. And this ability is grounded on what Max-Neef calls 'self-reliance,' a notion which is close to Sen's concept of agency (Cruz 2006). Max-Neef has developed a taxonomy of human needs that goes far beyond material needs. He distinguishes four categories of existential needs: *Being, Having, Doing and Interacting*; and nine categories of axiological needs: *Subsistence, Protection, Affection, Understanding, Participation, Idleness, Creation, Identity and Freedom*. The combination of axiological (in rows) and existential (in columns) needs creates a matrix that is used for a multidimensional and participatory assessment of well-being. Table 2 presents this matrix.

Max-Neef (1991) explains that fundamental human needs are finite, identifiable and common to all humans. They are non-hierarchical (except the need of subsistence) and are open to revision. Guillen-Royo (2015) explains that satisfiers (words that appear in

² For further details on this approach (both theoretical and empirical) see Max-Neef (1991), Cruz (2006), Cruz et al. (2009), Guillen-Rollo (2010, 2015), Rauschmayer et al. (2011).

³ The basic needs approach was criticized for three main reasons: (i) being too narrowly focused on material commodities bundles; (ii) being too paternalistic (iii) for neglecting the question of opportunities (see for further details Deneulin and Sahani (2010, p. 58).

⁴ According to Guillen-Royo (2015) Sen criticizes the language of needs as being paternalistic and addressing people only in terms of what they lack. Sen (2009, p. 250) seems to continue to maintain his position in *The Idea of Justice*: "Seeing people only in terms of needs may give us a rather meagre view of humanity".

⁵ By giving the mean to actualize the need, the 'helper'—State or NGO, UN, etc.,—was determining the need in itself.

⁶ Cited in Cruz et al. (2009).

Table 2 The matrix of fundamental human needs and satisfiers (Max-Neef 1991), columns correspond to existential needs and rows to axiological needs

	Being (personal or collective attributes)	Having (institutions, norms, tools)	Doing (personal or collective actions)	Interacting (spaces or atmospheres)
Subsistence	1. Physical health, mental health, equilibrium, sense of humor, adaptability	2. Food, shelter, work	3. Feed, procreate, rest, work	4. Living environment, social setting
Protection	5. Care, adaptability, autonomy, equilibrium, solidarity	6. Insurance systems, savings, social security, health systems, rights, family, work	7. Co-operate, prevent, plan, take care of, cure, help	8. Living space, social environment, dwelling
Affection	9. Self-esteem, solidarity, respect, tolerance, generosity, receptiveness, passion, determination, sensuality, sense of humor	10. Friendships, partners, family, partnerships, relationships with nature	11. Make love, caress, express emotions, share take care of, cultivate, appreciate	12. Privacy, intimacy, home, space of togetherness
Understanding	13. Critical conscience, receptiveness, curiosity, astonishment, discipline, intuition, rationality	14. Literature, teachers, method, educational and communication policies	15. Investigate, study, educate, experiment, analyze, meditate, interpret	16. Settings of formative interaction, schools, universities, academies, groups, communities, family
Participation	17. Adaptability, receptiveness, solidarity, willingness, determination, dedication, respect, passion, sense of humor	18. Rights, responsibilities, duties, privileges, work	19. Become affiliated, cooperate, propose, share, dissent, obey, interact, agree on, express opinions	20. Settings of participative interaction, parties, associations, churches, communities, neighborhoods, family
Leisure/ idleness	21. Curiosity, receptiveness, imagination, recklessness, sense of humor, lack of worry, tranquility, sensuality	22. Games, spectacles, clubs, parties, peace of mind	23. Day-dream, brood, dream, recall old times, give way to fantasies, remember, relax, have fun, play	24. Privacy, intimacy, spaces of closeness, free time, surroundings, landscapes

Table 2 continued

	Being (personal or collective attributes)	Having (institutions, norms, tools)	Doing (personal or collective actions)	Interacting (spaces or atmospheres)
Creation	25. Passion, determination, intuition, imagination, boldness, rationality, autonomy, inventiveness, curiosity	26. Abilities, skills, method, work	27. Work, invent, build, design, compose, interpret	28. Productive and feedback settings, workshops, cultural groups, audiences, spaces for expression, temporal freedom
Identity	29. Sense of belonging, consistency, differentiation, self-esteem, assertiveness	30. Symbols, language, religions, habits, customs, reference groups, roles, groups, sexuality, values, norms, historic memory, work	31. Commit oneself, integrate oneself, confront, decide on, get to know oneself, recognize oneself, actualize oneself, grow	32. Social rhythms, every day settings, setting which one belongs to, maturation stages
Freedom	33. Autonomy, self-esteem, determination, passion, assertiveness, boldness, rebelliousness, tolerance	34. Equal rights	35. Dissent, choose, be different from, run risks, develop awareness, commit oneself, disobey, meditate	36. Temporal/spatial plasticity

the boxes of the matrix) represent how needs (headers of rows and columns) are pursued. Satisfiers are defined as social practices, values, attitudes, actions, forms of organization, political models and environmental characteristics that are used to actualize needs. For example, the satisfier ‘formal education’ requires goods and services such as training courses, teachers, wi-fi access, laptops, handbooks, schools, a favorable social context, etc. On the contrary to fundamental human needs, satisfiers change with history and vary across cultures (Cruz et al. 2009). It has to be noticed that one satisfier can contribute to the actualization of several needs. In sum, needs represents our common human evolutionary heritage and satisfiers represents the particular means by which different societies and cultures aim to realize their needs (Cruz et al. 2009).

The matrix highlights the irreducible multidimensionality of HWB. Human poverty is then defined as the inadequate satisfaction of one category of needs. According to Cruz et al. (2009, p. 2024): “...any unsatisfied or not adequately satisfied human need reveals a form of human poverty (...). Thereby, we should rather be talking not of poverty in the singular, but of poverties in the plural. Every person, culture or society may be rich in certain aspects of life, and poor in others.”

Ultimately, people should be free to choose how to satisfy their needs according to their values and aspirations, in that they should be free to choose the satisfiers they value (Cruz

2006). From this perspective, one could say that Max-Neef's concept of satisfier is close to Sen's concept of functioning.

Conclusively, Max-Neef's approach provides a multidimensional and agency-oriented conceptualization of needs that seems consistent with the CA. After this brief presentation, the next subsection discusses the possible complementarities between both approaches.

2.3 A Possible Combination of both Approaches

In both approaches, functionings and satisfiers are considered the “basic bricks” or the “basic elements” of HWB. Consequently, functionings or satisfiers can constitute a convergence point between the two approaches. If we consider functionings/satisfiers as a springboard for linking the two approaches, capabilities would then account for freedom of choice (potential functionings/satisfiers) and needs would account for well-being satisfaction (achieved functionings/satisfiers). Figure 2 tries to capture this idea.

In this figure, resources and conversion factors provide the input for the development of a person's capabilities set. The set of potential functionings defines the person's freedom of choice and the set of achieved functionings corresponds to well-being satisfaction. This satisfaction is captured by the concept of needs. From this view, needs correspond to well-being achievements, and capabilities correspond to freedoms of achievement. Building on Rauschmayer et al. (2011), it is possible to say that the development of capabilities is required in order to adequately meet a person's needs, and the adequate satisfaction of needs improves the development of capabilities. By combining both approaches, it is then possible to provide a dynamic conception of well-being. From this view, it would be possible to define a list of capabilities required to actualize the nine fundamental needs (this aspect is further developed in Sect. 5.2). If Sen is reluctant to the idea of defining a universal list of capabilities (Sen 2004), some other CA scholars have done it (see especially Nussbaum 2003 and for a review Alkire 2002, 2010). According to Gough (2015), without such a list, comparisons between radically different cultures and throughout time are not possible. Moreover, it has to be noted that the absence of a list in the CA has rendered its operationalization difficult (Alkire 2002, 2006). The fundamental problem is the opposition between the universality of humankind and cultural diversity. In the FHN approach, universalism is taken into account by the concept of needs (which are common to all humans and do not change across culture),⁷ while cultural diversity (and even personal heterogeneity) is taken into account through the concept of satisfiers (which can change across culture and social groups). Then, from this perspective, it is possible to comprehend both the diversity of cultures within the unity of humankind and the unity of humankind within the diversity of cultures.

Finally, Max-Neef's list captures axiological and existential categories, which is consistent with the definition of capabilities in terms of “beings” and “doings” that people value. The list (more accurately the matrix) has been largely proof-tested through participatory workshops in different countries and cultures. The list captures both individual and collective attributes and captures almost all other dimensions present in the other lists, so it seems highly suitable for an operationalization of human development research.

⁷ According to Gough (2015), even Nussbaum heavily relies on the concept of needs to justify her list: “human need is a relatively stable matter, and thus there is some hope that we can give an account of basic human needs that will remain reasonably constant over time... the idea of what human beings need for fully human living is among the most vivid intuitive ideas we share” (Nussbaum 2006, pp. 278–279). According to Cruz et al. (2009), needs reveal that all human beings share the essence of being sentient, social and self-reflective. Thus, their fulfillment is always desirable for all, and their deterrence is undesirable for all as well (ibid.).

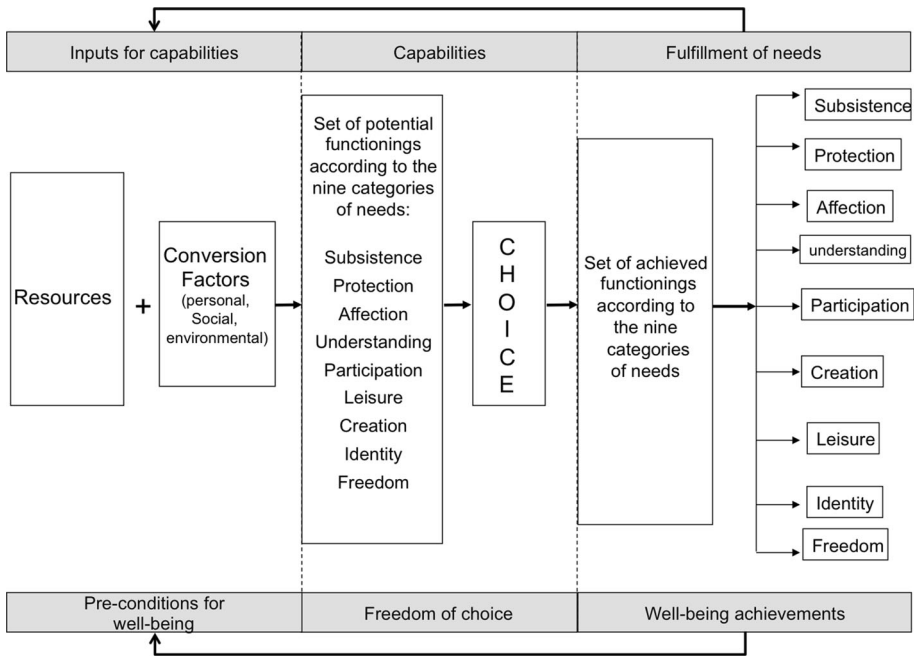


Fig. 2 A possible combination between the CA and FHN for capturing both freedom of choice and needs satisfaction

3 Materials and Methods

In this section, we first present the context in which the study took place. We then describe the particular method we developed. This method is comprised of two different phases: a series of participatory workshops and then a questionnaire survey.

3.1 Context of the Study

We worked in close collaboration with Professor Dominique Laurette and his students in the Robert Doisneau secondary school (public school). The school is located in Dammarie-lès-lys (Ile-de-France, France). Our work took place from January to March 2012. The students were in the last year of secondary school (15–16 years old) and they attended a special education section called SEGPA. SEGPA sections are annexed to “normal” secondary school to accommodate students with social and educational difficulties. SEGPA courses are oriented towards technical teaching (in this case construction). According to the French Ministry of Education, students who are oriented into SEGPA suffer from serious and lasting learning difficulties. They have not mastered all the expected knowledge and skills at the end of primary school. Consequently, they are, for the most part, oriented into SEGPA sections when they start secondary schooling at the age of 11–12 years old. The Robert Doisneau secondary school is located in Dammarie-les-Lys, a peripheral city of the Paris region (Ile-de-France). This city is recognized by the French government as a sensitive urban zone “zone urbaine sensible” (ZUS) because of several cumulating urban problems, such as low housing quality (council estate), high rate of poverty (income poverty rate 19.9 % against 13.9 % in national average in France), high

rate of unemployment (16.1 % against 10 % in France),⁸ delinquency, etc. The secondary school is considered as an educational priority area “zone d’éducation prioritaire” (ZEP). Consequently, it is endowed with more funds and enjoys a larger pedagogical autonomy.

3.2 Method

The operationalization of our combined framework in this particular context raised three methodological challenges: (i) we had to rebuild the Max-Neef’s matrix of needs with the students in all its complexity because it does not exist in French; (ii) we had to adopt a participatory action research (Kindon et al. 2009) methodology that allowed a high degree of empowerment for the students in order to be consistent with the philosophy of the SEGPA, the CA (Frediani 2006, 2015) and FHN (Guillen-Royo 2015); and (iii) we had to innovate in order to be able to use the matrix of needs to assess inequalities between the SEGPA group and a control group. Indeed, as far as we know the matrix has never been used for this purpose nor for quantitative subjective well-being assessment. The method we developed to tackle those three challenges comprises two major phases. Phase 1 was about implementing participatory workshops with the students to rebuild the matrix of needs, to identify potential causes of needs deprivation and to assess the impact of the workshop on participant empowerment. Phase 2 was about realizing a questionnaire survey in order to assess inequalities regarding the level of needs satisfaction between the SEGPA group and a control group. Those two phases are described below.

3.2.1 Phase 1

Phase 1 was divided into three successive steps (rebuilding the matrix, assessing needs satisfaction and identifying potential causes of deprivation, assessing the impact of the workshop in terms of student empowerment). In total we organized 5 participatory workshops from January to March 2012 with 8 male students, aged between 15 and 16. During the workshops, the researcher only played a facilitator role and the teenagers took the central active part by building their own evaluative framework and data collection. We now describe each step in detail.

Step 1 this first step consisted of rebuilding the matrix of needs with the words of the teenagers. We used the frame provided by Max-Neef as a starting point to trigger the discussion. We started by writing the three first needs on the blackboard (Subsistence, Protection and Affection) and the four axiological categories. A deliberative procedure spontaneously emerged to fill up the empty matrix; finding the corresponding satisfiers for each of the matrix boxes.⁹ At the end of the session we asked them to give a definition for the three needs on which we had worked. We repeated this procedure three times for covering the nine needs. In three two-hour sessions, we had completed the matrix. Due to time constraints, sometimes some boxes of the matrix remained empty.

⁸ Those numbers come from the French institute of statistics (INSEE) for 2012: <http://www.insee.fr/fr/themes/comparateur.asp?codegeo=com-77152>.

⁹ The students were asked to suggest satisfiers that could match with the three first categories of needs. One student listed the suggested satisfiers on the blackboard without classifying them. Then for each satisfier we made a round of the table asking each participant where he would put the satisfier. In other words, we first ask to which axiological category the satisfiers belongs and then to which existential category. Placing the satisfiers in the matrix often triggered an intense debate among the teenagers. During the debate each participant presented his arguments. Sometimes some of them reached unanimity. When unanimity cannot be reached, we proceeded to a vote for choosing in which box of the matrix the satisfier would fit the best.

Step 2 the second step included two four-hour sessions. The first session was devoted to finishing and reviewing the matrix and to scoring each box of the matrix (in a sense, we directly used the matrix as a questionnaire). During the review process, we drew their attention to specific satisfiers they had put in particular boxes (for example, they put 'making love' in Leisure/Doing, and we discussed why they had decided to do so). We also compared their matrix with the Max-Neef's original one and drew their attention to the boxes that remained empty or almost empty. We discussed their choices and the possibility of changing some satisfiers from one box to another and complementing the boxes with satisfiers where the boxes remained empty. Comparing their matrix with the original one (the 'standard') is also a mean to avoid preference adaptation or to forget a topic of discussion regarding some particular human development dimensions (Alkire 2006). After this whole process, the matrix was ready to be used as a questionnaire. We simply asked the students to individually and anonymously score each box of the matrix between 0 and 5 (0-maximum deprivation and 5-maximum satisfaction). The words contained in the boxes described a particular situation of well-being that the students had to score, though the score was independent from the number of words (satisfiers) contained in the box. Such a scoring enables the assessment of subjective well-being regarding the level of satisfaction of the nine axiological needs and the four existential ones. For each student, we obtained a scored matrix of 36 dimensions, describing 36 situations of well-being. For processing the data we calculated the mean of each cell and then by aggregation a mean for each category of needs. The results are presented in Table 4 in the next section.

The second session was devoted to the identification of the possible causes of non-satisfaction of the students' needs. Once the matrices were scored, we moved on to the identification of unsatisfied needs and what the possible causes of deprivation would be. The process of scoring the matrix was anonymous, so we were able to identify to the whole group what the most unsatisfied needs were. Basically, we identified the boxes that received a score between 0 and 2, and then asked the group what the possible causes of deprivation would be. The identified barriers impeding satisfaction were written on a piece of paper by the student who suggested it and taped to the blackboard according to the parameters that condition the acquisition of capabilities and the development of agency (resources, rights, conversion factors etc., see Table 1 in Sect. 2.1). These categories were previously explained and formulated in a language that could be understood by the students (we spoke about access to natural resources, economic resources, rights, internal capacities and external barriers).

3.2.2 Phase 2

The second phase consisted of extending the use of the rebuilt matrix to another group of SEGPA students in order to verify that it was understandable by students who did not participate in building the matrix and for gathering more data. Ten other SEGPA students of the same age and level scored the matrix (9 males and 1 female). In the end, we totaled 18 scored matrices for the SEGPA group. In order to test the relevance of the matrix for assessing inequalities, we had to look for a control group. This control group consisted of 16 students (6 females and 10 males) aged between 15 and 17 years old of the Assomption-Forges technical secondary and high school (Private school). These teenagers were also engaged in technical learning, but contrary to SEGPA students, they chose to do so. They did not present any particular social or educational problems. Their teacher asked them to score the matrix as the students from SEGPA did. For processing the data, we calculated

Table 3 The matrix of needs built by the SEGPA students

	Being (Being able to develop feelings, skills, personal qualities, etc.) <i>Am I being... ?</i>	Having (Being able to have things or benefit from, etc.) <i>Do I have or do I benefit from...?</i>	Doing (Being able to achieve actions, etc.) <i>Am I capable of ...?</i>	Interacting (Being able to interact with your social and natural environment) <i>Can I interact with my environment ...?</i>
Subsistence (what is necessary to survive)	Being happy, feeling fulfilled Being able to adapt Being physically and mentally well Being respectful, being balanced Being generous	Food Water Shelter Clothes Material comfort Planet Earth Job	Eating and drinking well Taking care of myself Talking with people Helping people Enjoying rest Being able to hope	Talk with people Finding food Breathing fresh air Planet Earth (enjoyable and livable environment)
Protection (what is necessary to feel safe)	Being in a good health Feeling safe Being autonomous	Police Politesse (manners, courtesy) Respect Laws, rights Social security	Recognizing other people and important matters in life Helping people Anticipating	Feeling good or comfortable Being protected from pollutions and bad weather conditions Ozone layer Laws
Affection (we need love)	Being sincere, Being friendly Being accepted as I am Showing concern for others and receiving care from others	Family Games Friends Generosity Boy-/girlfriend	Making love Having children Expressing emotions and feelings	Being grateful Solidarity Love, Friendship Meeting places Humor
Understanding (trying to understand Nature and people)	Being coherent Intuition Being audacious Being critical Being rational	Coherence, Public education Compassion Adaptation Teachers Books	To interpret, to focus Making yourself understood Presenting one's arguments Learning, experimenting	Language To make yourself understood Talking to each other School, universities, etc. Museums, etc.
Participation (trying to participate to the natural and social environment)	Being surrounded (by friends and family) Being welcoming Being courageous Being proactive	Obligations Rights Responsibilities Convictions/opinions Job	Association To cooperate Having fun Team play Sharing	Talking to each other Communication Social center Associations, the street Meeting places
Leisure (to entertain and have fun)	Being relaxed Imagination To enjoy yourself Being passionate Being curious	Passion Sports facilities Games Friends Free-time	To rest, to take walks, to play for fun, to talk Watching TV Invent Enjoying life To dream, to hope	Talking to each other Skate Park, Staircase Halls of buildings Natural settings

Table 3 continued

	Being (Being able to develop feelings, skills, personal qualities, etc.) <i>Am I being... ?</i>	Having (Being able to have things or benefit from, etc.) <i>Do I have or do I benefit from...?</i>	Doing (Being able to achieve actions, etc.) <i>Am I capable of ...?</i>	Interacting (Being able to interact with your social and natural environment) <i>Can I interact with my environment ...?</i>
Creation (to create different things, to put life into something)	Imagination Intuition Being creative Rationality Being an artist Being skilled	Passion Imagination Performance Methods	To build To interpret Fashion To draw	Nature Workshops The workplace Home, virtual creation (video games), creative spaces
Identity (to identify people or something)	Profile, personality Being an artist Being professional Being accepted as I am Being respectful and being respected	Performance Identification documents Symbols Habits Dignity, values Recognition	Creating your image Habits Improving myself Developing myself Knowing myself Being socially integrated	Family Privacy Sense of belonging Place of birth Maturity
Freedom (to have choices in life and responsibilities)	Humor Autonomy Rationality Tolerance Being different	Ideas Choices and possibilities Will Responsibilities	To appreciate Going out, freedom of movement To meditate To read To commit oneself	Humor Expression Tolerance Freedom of speech and information

the mean of each box and then a mean for each category of needs. We do not consider gender issues.

4 Results

This section presents and analyzes the results from Phases 1 and 2.

4.1 Results of Phase 1 (Workshops)

4.1.1 Step 1: Rebuilding the Matrix of Needs with the SEGPA Students

From the beginning of the first session, all the students played active roles in the workshop, which helped by making them feel valued. At the end of the first session, the students were very surprised at their own capacities. They were unaware that they knew all of these ‘nice and complicated’ words that they had put into the matrix. They

gradually discovered their own abilities. In such workshops, the process is as important as the result. In addition, their French teacher was also very surprised and decided to use the matrix in her classes. She decided to undertake the construction of a thought tree with her students, where the needs constituted the branches of the tree and the satisfiers were its leaves. The tree was displayed in the entrance hall of the secondary school. That was a way to promote the SEGPA students in front of the ‘normal’ teachers and students. We would like to quote one student who said, when we asked each of them to give their final impression of this experience: “Before the workshop we were a collection of individuals gathered together in a classroom, now we are a united team.” He wanted to say that before this collective experience they were a mere collection of individuals gathered in the same room through the force of circumstance, and now, bonds have been created between them. They constituted a group who worked on collective project: rebuilding the matrix with their hands and brains. The following Table 3 provides a direct translation of the matrix they built that was used for the scoring exercise (see Appendix 1 for the original French version).

4.1.2 Step 2: Assessing the Level of Needs Satisfaction and Identifying Possible Causes of Deprivation

The following Table 4 reports the results obtained when we asked the group of SEGPA students who participated in the workshop to score each box of the matrix between 0 and 5 (presented just above). The darker color indicates a higher level of satisfaction, and

Table 4 Average level of needs satisfaction of the SEGPA students who participated in the workshop (needs are ranked according to their level of satisfaction) (n = 7, on this day, only 7 out of the 8 students were present)

	1-Interacting	2-Having	3-Doing	4-Being
1-Affection				
2-Subsistence				
3-Leisure				
4-Protection				
5-Participation				
6-Freedom				
7-Identity			*	
8-Creation		*		
9-Understanding			*	

* : the asterisks indicate the three boxes with the lowest percentage of satisfaction

Legend	
Rate of satisfaction ≤40%	
40% ≤Rate of satisfaction ≤60%	
60% ≤Rate of satisfaction ≤80%	
Rate of satisfaction ≥80%	

conversely, the lighter color signifies a lower level of satisfaction (see the legend below the table).

The axiological needs of Understanding, followed by Creation and Identity are the least satisfied. One would expect that the need for Understanding would be the least satisfied because they are young people with learning difficulties, but as we will see later, we found the same results in our control group. The box Understanding/Doing is the least satisfied of this row. It comprises some satisfiers such as: *to interpret, to make yourself understood, to present one's arguments*. The second least satisfied need is that of Creation. The box with the lowest level of satisfaction of the whole matrix corresponds to Creation/Having and contains satisfiers such as: *having passions, method, performance, imagination, etc.* So, we can infer that those students are not able to develop such kinds of satisfiers/functionings. The three most satisfied needs are Affection, Subsistence, and Leisure. If we now analyze the existential categories, the most satisfied need is Interacting and the least satisfied is Being. These results confirm the intuition of their professor, Mr. Laurette. According to him, they are constantly interacting, unable to focus on themselves and, inevitably, to find themselves. They need to be able to experience inner peace in order to discover who they really are, but according to him, this is really difficult because they don't benefit from an adequate environment to do so. He advocates the creation of a place that is dedicated to silence and rest within the secondary school.

After having assessed the degree of needs satisfaction, the students collectively identified some of the barriers that render their satisfaction difficult. Table 5¹⁰ reports the different barriers identified by the students.

Many things could be said regarding this table. We chose to discuss, here, the two barriers named "impossibility to pursue advanced education" and "empty head" because they allow investigating the tensions between individual abilities and social constraints. The way the students have named those two barriers (as well as "We don't feel protected by the Police and we fear abuses of power") is the crude verbalization of the discrimination and injustices they suffer. Making the distinction between internal and external conversion factors allows investigating the articulation between individual skills/abilities and social opportunities. Indeed, the students had hesitated a lot when classifying the problem "impossibility to pursue advanced education," between the two categories of "internal capacities" and "external barriers." Moreover, they specified between brackets "I know that I could be capable of but I am afraid of being ridiculed there." The fact that they put this problem into the category of 'internal capacities' demonstrates that they have internalized the social discrimination from which they suffer. In addition, they also mentioned 'empty head' in this barrier category. Such a way of verbalizing the problem is an indicator of the high degree of social exclusion and social stigmatization to which these teenagers have been exposed. This way of formulating these two barriers and their classification into the category of 'internal capacities' means that they consider that the main problem comes from themselves and reflects their lack of self-esteem. This interpretation is supported by the testimony of the headmaster of the secondary school to whom we showed our results. According to her: "With the new paradigm of 'equality of opportunities' claimed by the French Ministry of Education, if you are not successful at school, or more largely in the society, this is your fault. This has a terrible impact on your self-esteem and self-confidence. Nowadays, if you are not good enough to adapt yourself to this society, this is your fault. This is you, as an individual, who bears alone the responsibility of your failure not

¹⁰ The categories of barriers correspond to the parameters that condition human agency presented in Table 1.

Table 5 Collectively identified barriers that impede the satisfaction of some deprived needs

Categories	Identified problems	Needs affected
Natural resources	A polluted planet Absence of forest	Subsistence/ interacting Leisure/ interacting
Economic resources	Lack of money Lack of time	Subsistence/doing/ having Participation/ having
Rights	Absence of national identification documents (immigration problems)	Protection/having
Internal conversion factors	Empty head Fear of being attacked Bad physical health Fear to go to meet new people Impossibility of pursuing advanced education (I know that I could be capable of, but I fear being ridiculed there)	Understanding/ being Protection/being Protection/being Affection/ interacting Identity/being
External conversion factors	Bad taste of the food in the school cafeteria, I'm always hungry after lunch We don't feel protected by the Police and we fear abuses of power We never participate enough	Subsistence/being Protection/having Participation/ interacting
Values	Life has changed, in the past money did not occupied a such central position as it is the case nowadays Life is more important than money but you need a minimum amount of money to live	Subsistence/ having

the society because the socio-political system supposedly postulates equal opportunities and rights for every citizen. The myth of 'equality of opportunity' makes you internalize the failure." This testimony is corroborated by the analysis of Peugny (2013) who explains that under the two paradigms of 'equality of opportunities' and 'meritocracy' that predominate in France, individuals are conceived as accountable agents who, alone, have to carry the burden of their difficulties. Social antagonisms are denied and each individual is erected as being responsible for his/her choices, successes and failures. This point is developed further in the discussion section (Sect. 5.1).

The next sub-section presents the results obtained when we distributed the matrix to another SEGPA group of 10 students (for a total of 18 SEGPA students) and to the control group (as a reminder the control group is comprised of 16 students of the same age but without any particular social or educational problems).

4.2 Results of Phase 2 (Survey)

We first present the results regarding the ranking of the different needs according to their level of satisfaction. Then, we compare the level of needs satisfaction between the SEGPA group and control group in order to assess the inequalities between the two groups.

4.2.1 Ranking of the Needs According to Their Level of Satisfaction

As explained in the Method section, we asked the two groups to score each box of the matrix between 0 and 5, according to their level of satisfaction. We then processed the data by calculating the mean of the level of satisfaction for each category of needs. The results are presented in the following Tables.

Table 6 shows very interesting results. Indeed, for both groups the three more satisfied needs are the same (but not in the same order): Leisure, Affection and Subsistence. Moreover, creation and understanding are almost the two least satisfied needs for both groups. However, due to the very small scale of the sample, it is impossible to conclude whether it is a trend or a coincidence. Nevertheless, this result could be considered as a hypothesis to be tested in a larger sample. Table 7 presents the ranking of existential categories according to their level of satisfaction.

The most satisfied existential need is Having for the control group and Interacting for the SEGPA group. In both cases, Doing is the least satisfied existential need.

4.2.2 Inequalities Regarding the Level of Needs Satisfaction

One of our goals was to test the matrix as a tool for investigating well-being inequalities. To do so, we now determine if there is a difference between the levels of satisfaction of needs between the two groups. Figure 3 presents the inequalities regarding the differences in the satisfaction of axiological needs, and Fig. 4 presents those regarding existential needs.

A first look at the two radars (Figs. 3, 4) seems to indicate that the level of needs satisfaction is higher for the control group than for the SEGPA group along all dimensions. We conducted statistical tests to verify this preliminary result.¹¹ We found that the level of satisfaction of the control group is significantly higher for the needs of Participation ($p = 0.017$), Leisure ($p = 0.002$), Creation ($p = 0.007$) and Identity ($p = 0.013$). The difference in the level of satisfaction between the two groups tends to be significant for the needs of Protection (0.062), Affection ($p = 0.068$) and Understanding ($p = 0.069$). There is no significant difference regarding the level of satisfaction of the needs of Subsistence ($p = 0.555$) or Freedom ($p = 0.108$). The smallest difference regarding the degree of satisfaction between the two groups is found for the need of Subsistence (74.4 % against 77.8 %, no significant difference, $p = 0.555$), and the highest for the need of Leisure (66.4 % against 85 %, significantly different, $p = 0.002$). Finally, if we compare the mean of the aggregate level of satisfaction of all axiological needs, there is a difference of 12.4 percentage points between the two groups (76.4 % for the control group against 64 % for the SEGPA group), and this difference is significant ($p = 0.007$).

We now analyze the inequalities regarding existential needs.

Regarding the existential needs, we find the same tendency for inequality. The level of satisfaction for the control group is higher than the SEGPA group for Being ($p = 0.012$), Having ($p = 0.002$) and Doing ($p = 0.012$). The highest difference is on Having ($p = 0.002$), and the lowest on Interacting (no significant difference, $p = 0.096$). If we aggregate all the existential dimensions, the level of satisfaction for the control group is significantly higher than the level of satisfaction for the SEGPA group ($p = 0.007$).

¹¹ We conducted *t* tests (welch) to compare the means of the two groups for each dimensions. We chose a confidence interval of 95 %. *P* value is regarded to be significant if $p < 0.05$.

Table 6 Ranking of the axiological needs according to their level of satisfaction

Control group (n = 16) (%)		SEGPA group (n = 18) (%)	
1-Leisure	85.0	1-Subsistence	74.4
2-Affection	81.6	2-Affection	71.7
3-Subsistence	77.8	3-Leisure	66.4
4-Participation	75.9	4-Freedom	65.0
5-Identity	75.3	5-Protection	63.6
6-Protection	75.0	6-Identity	61.1
7-Freedom	74.7	7-Understanding	59.4
8-Creation	71.9	8-Participation	59.2
9-Understanding	70.6	9-Creation	54.4

Table 7 Ranking of existential needs according to their level of satisfaction

Control group (n = 16) (%)		SEGPA group (n = 18) (%)	
1-Having	79.2	1-Interacting	66.9
2-Being	77.1	2-Having	65.4
3- Interacting	75.1	3-Being	63.5
4-Doing	74.3	4-Doing	60.2

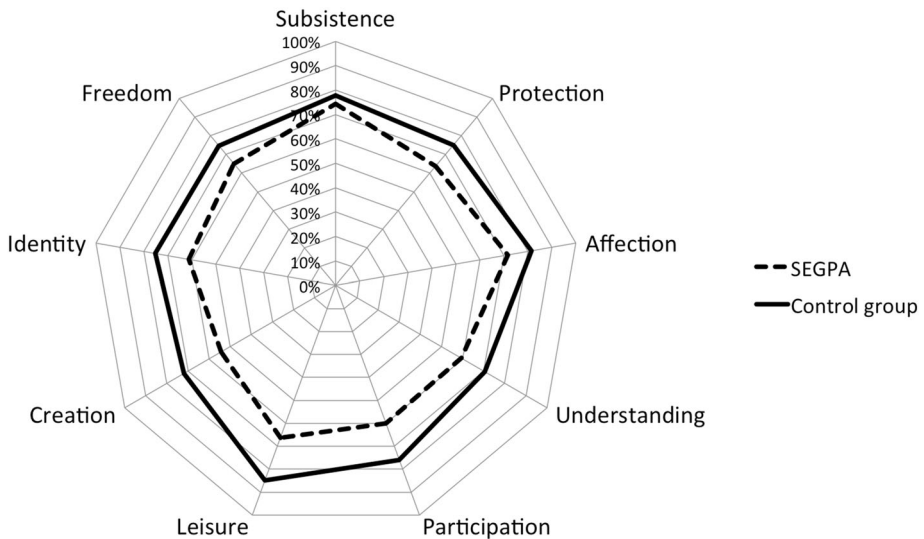


Fig. 3 Inequalities regarding the satisfaction of the axiological needs

In light of these results, we can conclude that the average level of needs satisfaction for the control group is significantly superior to the level of satisfaction for the SEGPA group, regarding both axiological and existential categories.

As a brief conclusion, even if the average level of needs' satisfaction for the control group is higher than the SEGPA group, there is still a strong margin of progression because their level of satisfaction is 76 % (only of 64 % for the SEGPA). Moreover, these results

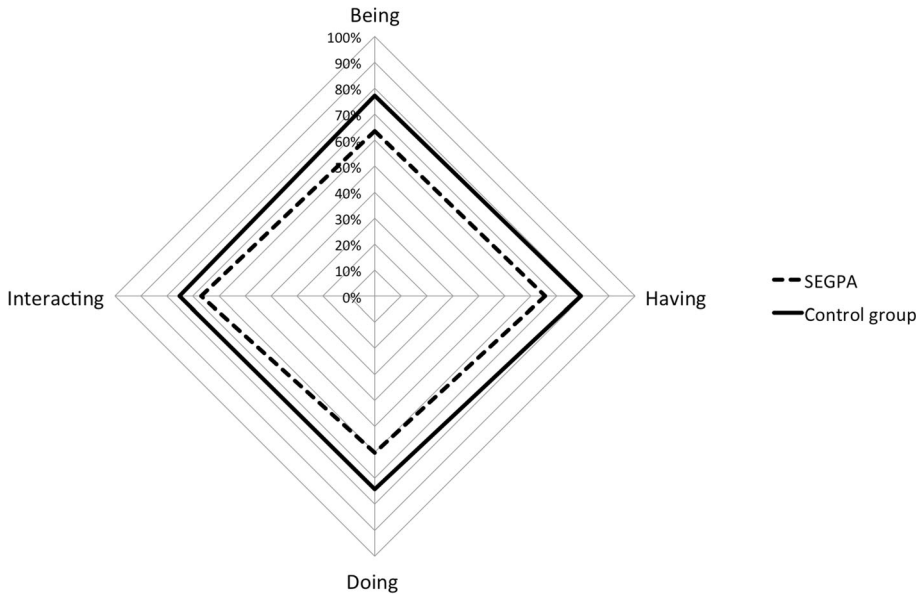


Fig. 4 Inequalities regarding the satisfaction of existential needs

render possible the identification of priorities to improve students' well-being by looking at the most unsatisfied needs which are almost the same for the two groups (e.g. 'Understanding', 'Creation and 'Doing'), and within the matrix of needs, it is possible to look at the most unsatisfied boxes. This way it will be possible to identify the functionings/satisfiers that are beyond the reach of the students. This point is further in the following discussion section.

5 Discussion

In this last section, we first discuss, in light of our case study, the risk of adaption of aspirations of the vulnerable students. Secondly, we debate the possibility of building a matrix of ten capabilities.

5.1 Fighting Adaptation of Aspirations: Empowering Vulnerable Students Through Alternative Forms of Education

The work presented here has helped to demonstrate the potential of these students by considering them as normal persons and by giving them importance, responsibilities and trust. As stated by their teacher, "these teenagers are not more stupid than the others, they just got less lucky," they grew up in less favorable contexts. According to him, the work they achieved for this study (the amazing work they did for rebuilding the matrix and all intense debates we had about their values and the values that prevail in the society, etc.) demonstrated that "they suffer from a social 'disability' not from any mental or intellectual disability." They just suffer from a lack of opportunities for

developing their fullest potential. Society clearly tells them that they are different. They are sidelined at the beginning of secondary school by the French educational system when they are assigned to SEGPA sections at the age of 11–12 years old. Once they are in SEGPA, they know that their future possibilities are seriously reduced. As we saw (Sect. 4.1.2) these vulnerable teens verbalized the very bad self-esteem that they have of themselves through phrases like “we have empty heads.” Consequently, they reduce their aspirations and refrain themselves from imagining better futures,¹² such as being able to go to university or even being able to finish high school. One could infer that these students cannot fulfill their needs of creation, participation, understanding (just to quote the most unsatisfied) due to the poverty manifested in their ability to aspire for better education from an early stage in life. It is not their fault if they are not able to access better opportunities as the rest of their peers, their economic, cultural, social background and the discriminatory societal context within which they live act as a burden instead of being a facilitator.¹³ As demonstrated by Peugny (2013) in the French context, it is the way that society operates and establishes rules that is responsible for the reproduction of inequalities, not the poor or vulnerable individuals. Our conceptual framework and the associated methodology enabled us to identify the unsatisfied needs and some of the barriers that restrain the development of the students’ agency. The next step would have been to identify the functionings/satisfiers that are required to break these barriers. However, to some extent, the empowerment aspect of our participatory research contributes in this direction (see Appendix 2). More generally, one could see participatory and alternative forms of education as a mean to develop the required functionings/satisfiers to improve the fulfillment of vulnerable and regular students’ needs.

Indeed, According to Merle (2012), the standards, methods and procedures used in France to evaluate students’ success at school are too often discouraging, stigmatizing or humiliating. Biggeri and Santi (2012), explain that the standard educational system and context (such as classrooms) are relevant for enhancing learning but are not sufficient on their own. They explicate that other forms of education and contexts are necessary and should be mainstreamed in the educational systems. They specify that these forms of education are places where teachers and children collaborate with each other to grow in understanding not only of the material world but also of the personal, social and ethical world around them: “Education, from a human development and CA perspective, should not be confined to learning mathematics or developing literature skills. On the contrary, it should also incorporate life-skills and should teach children how to be autonomous, how to cooperate and collaborate, and how to interact with others and with the world. In other words, the educational system should aim to expand children’s real opportunities (i.e. capabilities) for present and future functioning” (Biggeri and Santi 2012, p. 375). The participatory workshops we organized offer a concrete example of what these other forms

¹² According to Conrardie and Robeyns (2013) adaptation of aspiration occurs at a non-conscious level, as a reaction to the painful process of cognitive dissonance that a person who cannot fulfill her unreachable desires or aspirations feels.

¹³ According to Merle (2012), in France, success at school is particularly dependent upon the social origin of the student’s parents. France is ranked in the penultimate position regarding the correlation between the socio-economic origin of the parents and the success at school of their children (OECD 2012). More generally, according to Biggeri (2007) children’s capabilities sets are at least partially affected by the capability set and achieved functionings of their parents, involving a cumulative path-dependent process which can be responsible of social reproduction.

of education could be and of their empowering impact on the capabilities of the participants (see Appendix 2).

5.2 Toward a Matrix of Ten Capabilities

Our case study showed the usefulness of a list of needs as a starting point for triggering discussions and then for assessing well-being in a truly multidimensional way. For all the reasons explained in Sect. 2.3, the CA could be inspired from FHN in order to elaborate a universal list of capabilities. However, this raises a couple of questions.

For example, should we remove the ninth need called ‘Freedom’ in order to be consistent with the CA? Indeed, through the combination of the FHN with the CA, freedom becomes constitutive of the conceptualization and assessment of well-being. Another question would be to discuss if the notions of resources and conversion factors of the CA already account for the functionings/satisfiers that are captured by the ‘Having’ and ‘Interacting’ categories. At another level, there is one dimension of well-being that is not captured by Max-Neef’s list, which is the Spirituality/Transcendence dimension. This dimension is present in several other lists (see Alkire 2002, 2010), so we suggest that it could be added to the nine other dimensions. Finally, the CA could be inspired from FHN in order to differentiate between the formulation of what is a functioning and what is a capability. From this perspective, Nussbaum’s categories of central capabilities (e.g. bodily health and integrity would be rather some functionings required to develop the capability of Subsistence; Practical reason a functioning belonging to the capability of Understanding and so on...) read rather as satisfiers or potential functionings than as capabilities. Similarly, all the entries of Durraippah’s list (2004)¹⁴ would be functionings/satisfiers and not capabilities.

Even if the previous questions need to be further debated, we have decided to offer a matrix of capabilities by complementing the students’ matrix. We have reformulated certain words and also complemented it with some examples of functionings/satisfiers from the original matrix of Max-Neef and with examples from Nussbaum’s list. We have also reformulated the definition of needs and transformed it into the capability vocabulary. Table 8 presents this matrix.

In this matrix, the axiological capabilities refer to the real freedoms that people enjoy to adequately satisfy one of the ten axiological needs. In other words, an axiological capability gathers the set of potential functionings required to satisfy a particular axiological need. Existential capabilities could be formulated in terms of ‘power to be,’ ‘power to do,’ ‘power to interact’ and ‘power to have.’ As we saw in the conceptual section (Sect. 2), in our combined framework, the notion of need is restricted to well-being achievements. For example, the need of Subsistence gathers all the achieved functionings required to satisfy it. In conclusion, this combination could help to specify, even more, the definition of capabilities. Indeed, in this framework, capabilities are the individual and collective freedoms (set of potential functionings) that people enjoy to adequately meet the fundamental human needs. From this perspective, sustainable human development is defined as: *the improvement of people’s capabilities to adequately satisfy their fundamental human needs, on one hand, via the equitable distribution of capabilities among the current generation and, on the other hand, via the transmission of freedom of choice across*

¹⁴ For example, “being able to be adequately nourished”, “being able to have adequate and clean drinking water” “being able to have energy to keep warm and to cook”, would belong to the Subsistence category of capability.

Table 8 Toward a matrix of capabilities (dotted lines indicate the categories that should be the object of further debate), columns capture existential capabilities and rows axiological capabilities

	Being Being able to acquire or to experience personal and collective attributes	Doing Being able to achieve individual or collective actions	Having Being able to access or benefit from: (Rights, institutions, goods and services, etc.)	Interacting Being able to interact with social and natural environments (locations, landscapes, etc.)
Subsistence	Feeling happy	To eat healthy	Healthy food	Enjoying a livable planet
Essential	Being in good physical and psychological health	To take care of yourself	Good water and air quality	Enjoying a fruitful living environment
functionings to survive	Being balanced	To rest	Job enabling personal and collective development	Talking to each other
	Adaptability	To aspire, to hope	Material comfort (home, clothes etc.)	Access to vegetable garden/farms
		Freedom of movement		
Protection	To feel safe	To recognize the others as human persons	Health care	Being protected from pollutions and natural disasters
Essential	Being autonomous	To be able to identify what really matters in life	Social security	Feeling comfortable
functionings to feel safe	Solidarity	Helping each other	Impartial institutions	Benefiting from privacy
			Laws and rights	
Affection	To be accepted as I am	To be able to show my feelings/emotions	Family	Access to meeting places
Essential	Kindness, generosity, Compassion	To make love	Boy/girlfriend	Experience interactions with non-human
functionings to feel loved	Sincere	To give birth to children	Friends	
	Humor	To love		
Understanding	Being rational	To be able to analyze	Training/ education	Being able to explain to each other your ideas
Essential	Being intuitive	To study, to focus	Scientific methods	Enjoying a school, university, museum etc.
functionings to understand others	Being consistent	To experiment	Books/sources of liable information	Enjoying interactions with ecosystems
persons and Nature	Being motivated	To learn	Teachers/mentors	
	Being curious	To understand		
Participation	Being connected (opp. of isolated)	To cooperate	Rights and obligations	Enjoying community meeting places
Essential	Being motivated	To associate with other	Responsibilities	Participating in collective actions
functionings to be able to participate in society	Developing agency	To share	Commitments	Participating in true democratic processes
	Developing team spirit	To communicate	Opinions	
		To have fun	Job	

Table 8 continued

	Being Being able to acquire or to experience personal and collective attributes	Doing Being able to achieve individual or collective actions	Having Being able to access or benefit from: (Rights, institutions, goods and services, etc.)	Interacting Being able to interact with social and natural environments (locations, landscapes, etc.)
Leisure/Idleness Essential functionings for a pleasant and playful entertainment	Feeling relaxed Being imaginative Being curious	To rest To have fun To do sports Invent, dream, aspire To have a walk	Hobbies, free time Sports infrastructures Games, parties, shows Friends Tranquility	Enjoying Natural places, landscapes, Enjoying City green parks Enjoying cultural, recreational places
Creation Essential functionings to create, to give life to things	Being imaginative Being intuitive Sensibility Developing artistic skills	Building things To interpret To draw To create	Artistic method Recognition Artistic culture Art tools Art and science settings	Enjoying Places of artistic creation Enjoying home as a space of creation Enjoying nature as a space of creation and inspiration
Identity Essential functionings to exist as a person, to belong to the human community and to the Earth	Developing self-esteem To be respected and to be respectful Self-confidence Developing professional skills	To develop your personality To improve yourself Personal and collective achievement To learn to know yourself	Symbols, landscapes Customs/traditions Dignity, values Recognition ID documents	To belong to a community, Territorial identity, feeling rooted in a place To know your roots Personal maturity
Freedom Essential functionings required to have choices and responsibilities	Autonomy Rationality Being different Tolerant Open-minded	To commit oneself To disobey To choose To dissent	Ideas Choices and possibilities Equal Rights	Freedom of speech Freedom of information Tolerance Temporal and spatial plasticity
Spirituality Essential functionings for developing a spirituality	Being able to experience inner peace Being sensitive to the world	To meditate To experiment	Personal ethics and norms Religious and laic moral	Being able to live with, concern for and in relation to other humans and non- humans

generations (adapted from Ballet et al. 2005). This definition reconciles human development formulated in terms of capabilities and sustainable development formulated in terms of needs.

6 Conclusion

The goal of the paper was to provide both a theoretical and empirical exploration of combining the CA and FHN.

On the theoretical side, the FHN approach complements the CA by allowing a clear specification of what the fundamental constitutive dimensions of HWB are. By introducing a clear distinction between needs and satisfiers, it helps the CA to assume a universalist character of human well-being dimensions. In sum, Max-Neef's approach provides a multidimensional and agency-oriented conceptualization of needs which is consistent with the CA. On the flip side, the FHN approach is complemented by integrating the freedom of choice into the conceptualization and assessment of needs. This allows an investigation into the potential causes of needs deprivation by using the different parameters that condition the development of agency and acquisition of capabilities.

On the empirical side, our case study has demonstrated the heuristic power of this combination. We have demonstrated the usefulness of our combined framework for participatory assessment of subjective well-being and the identification of the barriers that hinder needs fulfillment. We have shed light on the risk that exist for vulnerable students to be victim of adaptation of their aspirations because of needs deprivation. Finally, our study shed light on the fact that postulating an 'equality of opportunities' paradigm for the educational system in a society where there is an unfair distribution of resources and conversion factors is not enough to reduce effectively well-being inequalities.

Acknowledgements The work presented here has been possible thanks to a partnership between the association of the Fontainebleau-Gâtinais biosphere reserve and the pedagogical team of the Robert Doisneau secondary school in Dammarie-lès-lys (Ile-de-France, France). This partnership provided suitable conditions to conduct the participatory action research presented in this article. Nothing would have been possible without the help of professor Dominique Laurette, many thanks to him. Many thanks to Gerald Valverde and Mrs. Gianotti from the Robert Doisneau secondary school. Many thanks to Patricia Fraile and Jean-Michel Martin from the Fontainebleau-Gâtinais Biosphere Reserve. Many thanks to Cathy Jolibert and Felix Rauschmayer for the fruitful discussions we had. Thanks to Moritz Lennert for his help. Thanks to Jeromy Hrabovecky for the editing and English style reviewing. Many thanks to the anonymous reviewers for their helpful comments. This research has been achieved through a CIFRE doctoral grant and the writing of the paper thanks to a FNRS post-doc fellowship grant.

Appendix 1

The original French matrix transformed into questionnaire.

	Etre <i>Sentiments, compétences, qualités etc.</i> <i>Est-ce que je suis / je sais être ?</i>	Avoir <i>S'approprier, bénéficier, etc.</i> <i>Est-ce que j'ai / je peux bénéficier ?</i>	Faire <i>Accomplir des actions etc.</i> <i>Est-ce que je suis capable / je peux ?</i>	Interagir <i>Avec son environnement naturel et social</i> <i>Est-ce que je peux interagir avec mon environnement ?</i>
Substance <i>Ce qui est nécessaire pour survivre</i>	<ul style="list-style-type: none"> contenu, repas me sentir bien physiquement et mentalement solidaire, courageux, m'adapter équilibré, préteur 	<ul style="list-style-type: none"> des aliments, de eau etc. confort matériel (vêtements, argent de poche etc.) un toit, travail planète 	<ul style="list-style-type: none"> manger équilibré prendre soin de soi se reposer, espérer aider les gens me déplacer 	<ul style="list-style-type: none"> trouver de la nourriture planète vivable (en bon état) cadre de vie agréable partir/discuter air pur
Protection <i>Ce qu'il faut pour se sentir en sécurité</i>	<ul style="list-style-type: none"> en bonne santé en sécurité autonome 	<ul style="list-style-type: none"> sécurité sociale, accès aux soins le respect la loi, des droits la politesse la police 	<ul style="list-style-type: none"> reconnaître les autres personnes et les choses importantes de la vie aider les gens anticiper 	<ul style="list-style-type: none"> être protégé de la pollution être protégés des intempéries (froid etc.) la couche d'Ozone être à l'aise la loi
Affection <i>On a besoin d'amour</i>	<ul style="list-style-type: none"> être accepté comme je suis être attentionné et recevoir de l'attention amical sincère 	<ul style="list-style-type: none"> famille compagne/compagnon générosité, compassion amis jeux 	<ul style="list-style-type: none"> exprimer mes émotions exprimer mes sentiments faire l'amour faire des enfants 	<ul style="list-style-type: none"> être reconnaissant solidarité aimer, amour, amitiés espaces de rencontres humour
Compréhension <i>Essayer de comprendre les gens et la nature</i>	<ul style="list-style-type: none"> rationnel discipliné adaptatif, intuitif (intuition) cohérent, critique 	<ul style="list-style-type: none"> éducation nationale méthode livres informations professeurs/mentors 	<ul style="list-style-type: none"> argumenter, analyser étudier, me concentrer essayer, expérimenter interpréter apprendre 	<ul style="list-style-type: none"> se faire comprendre école, université, centres de formation langage, se parler musées
Participation <i>Essayer de participer à la société et l'environnement qui nous entoure</i>	<ul style="list-style-type: none"> entouré accueillant audacieux actif 	<ul style="list-style-type: none"> droits et obligations responsabilités convictions/opinions travail 	<ul style="list-style-type: none"> m'associer, coopérer m'aimer jouer collectif participer, partager 	<ul style="list-style-type: none"> lieux et espaces de rencontre foyers, associations, clubs, MJC communication se parler
Loisir/divertissement <i>Se divertir en se faisant plaisir</i>	<ul style="list-style-type: none"> détendu imaginatif me faire plaisir curieux 	<ul style="list-style-type: none"> passions, temps libre équipements sportifs jeux, fêtes, spectacles amis tranquillité, calme 	<ul style="list-style-type: none"> me détendre, me reposer m'amusser, jouer pour le plaisir inventer, rêver, espérer me promener profiter de la vie 	<ul style="list-style-type: none"> skate Park, espaces naturels (forêt, lacs, etc.) parcs, espaces verts parcs urbains, cours centres culturels
Création <i>Créer des choses différentes, donner vie à quelque chose</i>	<ul style="list-style-type: none"> créatif artiste habile imaginatif intuitif 	<ul style="list-style-type: none"> passions méthode réussite succès 	<ul style="list-style-type: none"> construire interpréter la mode dessiner 	<ul style="list-style-type: none"> lieux de création (salle de répétition etc.) chez soi création virtuelle (jeux vidéo) ateliers, l'entreprise la nature
Identité <i>Exister en tant que personne, appartenir à la communauté humaine et à la Terre</i>	<ul style="list-style-type: none"> personnalité, profil respectueux et être respecté fier de ce que je suis artiste professionnel 	<ul style="list-style-type: none"> papiers d'identité symboles habitudes dignité, valeurs reconnaissance 	<ul style="list-style-type: none"> créer mon image m'actualiser, m'améliorer me développer, évoluer m'intégrer me connaître 	<ul style="list-style-type: none"> famille intimité appartenance lieu de naissance maturité
Liberté <i>Avoir des choix dans la vie et des responsabilités</i>	<ul style="list-style-type: none"> professionnel être différent, être autonome tolérant rationnel humour 	<ul style="list-style-type: none"> idées le choix (ou des choix) volonté responsabilités 	<ul style="list-style-type: none"> sortir, se déplacer librement apprécier méditer, lire m'engager 	<ul style="list-style-type: none"> humour tolérance liberté d'expression et d'information

Appendix 2

At the end of the last workshop we distributed a questionnaire to the vulnerable students in order to assess the skills/abilities they acquired or strengthened by participating in the workshop. The public school has certain educational objectives to reach, so we really wanted to show that our methodology helped the students to develop the skills that they were supposed to acquire before they finished secondary school. We looked into the official documents and set up the questionnaire regarding the objectives that are nationally defined by the French Ministry of Education. The following table lists the skills/abilities grouped under Max-Neef's categories that we tested through the questionnaire. The question was: "Do you think your participation in the workshop helped you to improve the following skills/abilities?" Four answers were possible: *Yes/A little/No/I don't know* (See Table 9).

In addition to this set of questions we also asked if their relationship with their teacher had changed (Fig. 5).

The figure shows some very positive results. They confirm that our goal of empowerment was reached. The 'Participation' category is the most improved. Three of the four most improved abilities belong to this category: 'Being able to work together (team work),' 'Being able to understand others persons' viewpoints' and 'Being able to observe social rules.' This is very encouraging because those abilities are required for cooperation, tolerance and social cohesion. The improvement of the two others categories of capability/needs is a bit lower but still very encouraging. For example, if we look at the question about self-esteem, four of the six students thought that their participation in the workshop had improved or slightly improved their self-esteem (only two answered 'No'). The least improved skill is 'being capable of scientific reasoning.' This is not surprising because it is

Table 9 The skills/abilities potentially acquired or strengthened by the students' participation in the workshops

Capability/ need category	Students' skills/abilities potentially acquired or strengthened during the workshop				
Understanding	Being able to analyze a situation	Being capable of scientific reasoning	Being able to argumentatively explain your point of view	Being able to participate in a debate or dialogue	
Identity and autonomy	Being able to observe autonomously simple instructions	Did you learn to self-evaluate yourself?	Did you learn to be more persevering?	Did the workshop help you to improve your self-esteem?	Being able to give a speech (in front of public audience)
Participation	Being able to work together (team work)	Being able to respect other people	Being able to understand others persons' viewpoint	Being able to observe social rules	Being able to participate in a collective work

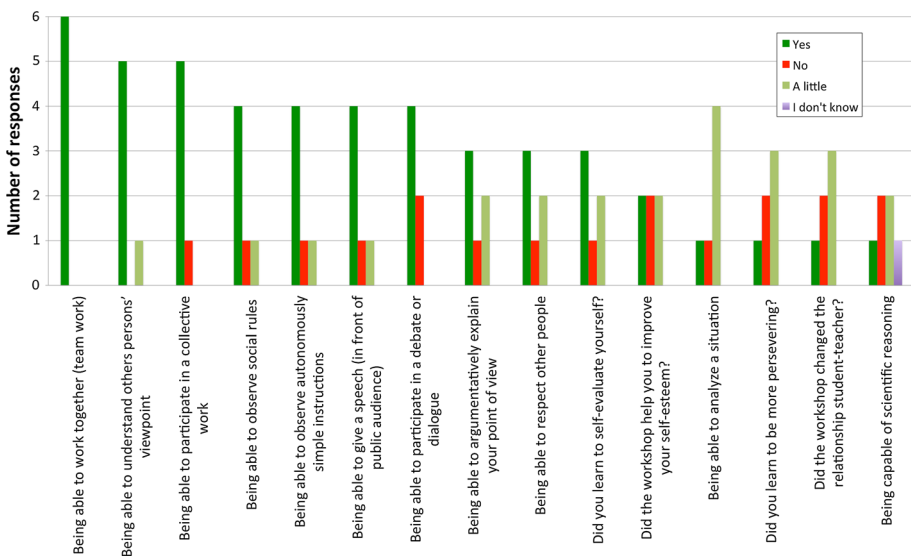


Fig. 5 Impacts of the workshop regarding the improvement of the students' skills (n = 6, on this day, only 6 students were present)

the most difficult ability to develop. However, the results are encouraging because three of the six students gave a positive answer to this question (one 'Yes' and two 'A little'). The modification of the relationship with the teacher occupies the penultimate position, but it is still a promising result because four out of the six students answered positively to this question (one 'Yes' and three 'A little').

References

- Alkire, S. (2002). Dimensions of human development. *World Development*, 30(2), 181–205.
- Alkire, S. (2006). Public debate and value construction in Sen's approach. In A. Kaufman (Ed.), *Capabilities equality: Basic issues and problems* (pp. 133–144). New York, London: Routledge.
- Alkire, S. (2010). Human development: Definitions, critiques, and related concepts. UNDP research paper 2010/01. http://hdr.undp.org/sites/default/files/hdrp_2010_01.pdf.
- Ballet, J., Dubois, J. L., & Mahieu, F. R. (2005). *L'autre développement, le développement socialement soutenable*. Paris: L'Harmattan.
- Ballet, J., Dubois, J.-L., & Mahieu, F.-R. (2007). Responsibility for each other's freedom: agency as the source of collective capability. *Journal of Human Development*, 8, 185–201.
- Ballet, J., Bazin, D., Dubois, J. L., & Mahieu, F. R. (2013). *Freedom, responsibility and economics of the person*. New York: Routledge.
- Biggeri, M. (2007). Children's valued capabilities. In M. Walker & E. Unterhalter (Eds.), *Amartya Sen's capability approach and social justice in education* (pp. 197–214). London: Palgrave Macmillan.
- Biggeri, M., Ballet, J., & Comim, F. (Eds.). (2011). *Children and the capability approach*. London: Palgrave MacMillan.
- Biggeri, M., Libanora, R., Mariani, S., & Menchini, L. (2006). Children conceptualizing their capabilities: Results of a survey conducted during the first children's world congress on child labour. *Journal of Human Development*, 7(1), 59–83.
- Biggeri, M., & Santi, M. (2012). The missing dimensions of children's well-being and well-becoming in education systems: Capabilities and philosophy for children. *Journal of Human Development and Capabilities*, 13(3), 373–395.
- Bonvin, J.-M., & Farvaque, N. (2008). *Amartya Sen: Une politique de la liberté*. Paris: Michalon.
- Conradie, I., & Robeyns, I. (2013). Aspirations and human development interventions. *Journal of Human Development and Capabilities*, 14(4), 559–580.
- Cruz, I. (2006). Human Development assessment through the human-scale development approach: Integrating different perspectives in the contribution to a sustainable human development theory. Ph.D. dissertation, Polytechnic University of Cataluña.
- Cruz, I., Stahel, A., & Max-Neef, M. (2009). Towards a systemic development approach: Building on the human-scale development paradigm. *Ecological Economics*, 68(7), 2021–2030.
- Deneulin, S., & Sahani, L. (Eds.). (2010). *Introduction to the human development and capability approach*. London: Earthscan.
- Dubois, J. L., & Trani, J. (2009). Enlarging the capability paradigm to address the complexity of disability. *ALTER-European Journal of Disability Research*, 3(3), 2–28.
- Duraipappah, A. K. (2004). Exploring the links: Human well-being, poverty and ecosystem services. UNEP and IISD. http://www.iisd.org/pdf/2004/economics_exploring_the_links.pdf.
- Frediani, A. (2006). Participatory methods and the capability approach. A briefing note. Human Development and Capability Association. https://www.ucl.ac.uk/silva/dpu/people/frediani/briefing_ca_pm.
- Frediani, A. (2015). Participatory capabilities in development practice. In A. Frediani & J. Hansen (Eds.), *The capability approach in development planning and urban design* (pp. 121–133). The DPU Working paper.
- Gough, I. (2015). Climate change and sustainable welfare: the centrality of human needs. *Cambridge Journal of Economics*, 39(5), 1191–1214.
- Guillen-Royo, M. (2010). Realising the 'wellbeing dividend' An exploratory study using the human scale development approach. *Ecological Economics*, 70(2), 384–393.
- Guillen-Royo, M. (2015). *Sustainability and wellbeing: Human-scale development in practice*. London: Routledge.
- Hart, C. (2012). *Aspirations, education and social justice: Applying Sen and Bourdieu*. London: Bloomsbury.
- Kindon, S., Pain, R., & Kesby, M. (2009). Participatory action research. *International Encyclopedia of Human Geography*, 8, 90–95.
- Lehtonen, M. (2004). The environmental-social interface of sustainable development: Capabilities, social capital, institutions. *Ecological Economics*, 49(2), 199–214.
- Max-Neef, M. (1991). Human scale development: Conception, application and further reflections. New York: The Apex Press. http://www.area-net.org/fileadmin/user_upload/papers/Max-neef_Human_Scale_development.pdf.
- Max-Neef, M. (1992). Development and human needs. In P. Ekins & M. Max-Neef (Eds.), *Real life economics* (pp. 197–214). London: Routledge.

- Merle, P. (2012). Éducation prioritaire Cinq principes pour une refondation. La vie des idées. <http://www.laviedesidees.fr/Education-prioritaire.html>.
- Millennium Ecosystem Assessment. (2005). *Ecosystems and human well-being*. Washington, DC: Island press.
- Nussbaum, M. (2003). Capabilities as fundamental entitlements: Sen and social justice. *Feminist Economics*, 9(2–3), 33–59.
- Nussbaum, M. C. (2006). *Frontiers of justice: Disability, nationality, species membership*. Cambridge, MA: Belknap Press.
- OECD. (2012). Programme international pour le suivi des acquis des élèves (PISA). Résultats pour le PISA 2012. Note par pays. <http://www.oecd.org/france/PISA-2012-results-france.pdf>.
- Otto, H. U., & Ziegler, H. (2010). *Education, welfare and the capabilities approach: A European perspective*. Opladen: Barbara Budrich.
- Pelenc, J. (2014). Développement humain responsable et aménagement du territoire. Reflexions à partir de deux réserve de biosphère. PhD Dissertation. University of Paris 3-Sorbonne Nouvelle. <https://halshs.archives-ouvertes.fr/tel-00993203/document>.
- Pelenc, J., Bazile, D., & Ceruti, C. (2015). Collective capability and collective agency for sustainability: A case study. *Ecological Economics*, 118, 226–239.
- Pelenc, J., Lompo, M. K., Ballet, J., & Dubois, J. L. (2013). Sustainable human development and the capability approach: Integrating environment, responsibility and collective agency. *Journal of Human Development and Capabilities*, 14(1), 77–94.
- Peugny, C. (2013). *Le destin au berceau: Inégalités et reproduction sociale*. Paris: Seuil.
- Pick, S., & Sirkin, J. (2010). *Breaking the poverty cycle: The human basis for sustainable development*. Oxford: Oxford University Press.
- Polishchuk, Y., & Rauschmayer, F. (2012). Beyond ‘benefits’? Looking at ecosystems services through the capability approach. *Ecological Economics*, 81, 103–111.
- Rauschmayer, F., Omann, I., & Frühmann, J. (Eds.). (2011). *Sustainable development: capabilities, needs, and well-being*. London: Routledge.
- Robeyns, I. (2005). The capability approach: A theoretical survey. *Journal of Human Development and Capabilities*, 6(1), 93–117.
- Schäpke, N., Rauschmayer, F. (2014). Going beyond efficiency: Including altruistic motives in behavioral models for sustainability transitions to address sufficiency. Sustainability science: Science, practice and policy. http://sspp.proquest.com/static_content/vol10iss1/1210-051.schapke-print.html.
- Schweiger, G., & Graf, G. (2015). *A philosophical examination of social justice and child poverty*. Basingstoke: Palgrave Macmillan.
- Sen, A. (1992). *Inequality reexamined*. Oxford: Oxford University Press.
- Sen, A. (1999). *Development as freedom*. Oxford: Oxford University Press.
- Sen, A. (2004). Capabilities, lists, and public reason: Continuing the conversation. *Feminist Economics*, 10(3), 77–80.
- Sen, A. (2009). *The idea of justice*. London: Allen Lane.
- Trani, J. F., Biggeri, M., & Mauro, V. (2013). The multidimensionality of child poverty: Evidence from Afghanistan. *Social Indicators Research*, 112(2), 391–416.
- Van Ootegem, L., & Verhofstadt, E. (2012). Using capabilities as an alternative indicator for well-being. *Social Indicators Research*, 106(1), 133–152.
- Walker, M., & Unterhalter, E. (Eds.). (2007). *Amartya Sen’s capability approach and social justice in education*. London: Palgrave Macmillan.
- Wüst, K., & Volkert, J. (2012). Childhood and capability deprivation in Germany: A quantitative analysis using German socio-economic panel data. *Social Indicators Research*, 106(3), 439–469.