

# Diversity of student perspectives on sustainable development as a feature of a competence-based learning environment

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# Chapter 22

Diversity of student perspectives on sustainable development as a feature of a competence-based learning environment

Astrid Offermans, Ron Cörvers and Joop de Kraker

## **Abstract**

A key competence for sustainability professionals is the ability to deal with a diversity of perspectives in a productive way. To develop this competence in students, a diversity of perspectives on sustainable development should be part of their learning environment, which includes their fellow students. We investigated this diversity among the student population of the Masters programme on Sustainability Science and Policy (SSP). Diversity appeared to be limited, probably as a consequence of self-selection. We conclude that a conscious effort is required to introduce more diversity in students' perspectives on sustainable development in the SSP learning environment.

## 22.1 A key competence for sustainability professionals

Since September 2011, ICIS has been offering a 1-year Masters programme entitled Sustainability Science and Policy (SSP), which aims to deliver “sustainability professionals”, i.e. academically trained professionals specialised in addressing sustainability challenges at the interface of science, policy, and society. Clearly, this aim requires that the graduates should have specific competences, which have to be developed in the Masters programme. A common approach to define these competences is to derive them from the typical nature of sustainability issues: complex, extending over multiple dimensions and scales, surrounded by uncertainty, normatively contested, and affecting a broad range of stakeholders as well as requiring their participation for an effective solution (see for example Wiek et al., 2011). This means that in addressing sustainability issues, SSP graduates will always have to collaborate with many other actors, who bring along a broad diversity of perspectives on the issue. A key competence will therefore be the ability to deal with this diversity of perspectives by interacting across the boundaries between different perspectives in a productive way. This ability has been termed “transboundary competence” (for a comprehensive discussion, see De Kraker et al., 2014). In terms of knowledge, skills, and attitudes, transboundary competence requires first and foremost an awareness of the diversity of perspectives and an understanding of the origins of this diversity. Skills include the ability to reflect on one’s own perspective and to articulate it, to (temporarily) adopt someone else’s perspective and to negotiate a shared perspective or frame of reference. The required attitudes towards other perspectives include acceptance of their legitimacy, willingness to engage, and belief in the added value of looking at a problem from different perspectives.

Competences are best developed in a learning environment that enables actual practice to be combined with explicit reflection on what and how to learn from that practice. An important characteristic of a learning environment fostering the development of transboundary competence would therefore be a heterogeneous student population (De Kraker et al., 2007). The idea is that diversity in disciplinary, national, and cultural backgrounds would translate into a diversity of perspectives on sustainable development. Discussion, dialogue, and collaboration with fellow-students would thus provide a continuous opportunity and need for “productive interaction across the boundaries between different perspectives.” In this chapter, we investigate to what extent the high level of heterogeneity in the SSP student population results in a learning environment with the desired high level of diversity in terms of perspectives on sustainable development. First, we present some more details of the Masters programme on SSP and then we discuss our approach to measuring diversity in student perspectives and its results. We conclude the chapter with a brief reflection on these results.

## 22.2 Masters programme on Sustainability Science and Policy (SSP)

### *Aims*

The aim of the SSP Masters programme is to train “sustainability professionals”, who have the competences to recognise, analyse, and respond to sustainability challenges; who can design, conduct, and evaluate sustainability assessments (for policymaking) in collaboration with other disciplines and stakeholders; and who are able to operate at the interface of science, policy, and society.

### *Courses*

The SSP Masters programme is a 1-year programme (60 ECTS), taught entirely in English and consisting of four core courses that provide a scientific basis on sustainability and policy-making in the context of sustainable development. The courses are entitled “Fundamentals of Sustainable Development”, “Global Dynamics of Sustainable Development”, “Governance for Sustainable Development”, and “Sustainability, Law and the Environment”. After completing these courses, students focus on “Sustainability Assessment”. This means that they learn to design, conduct, and evaluate sustainability assessments for policy making in the pursuit of sustainable development through another three courses: “Knowledge Production for Sustainable Development”, “Methodology for Sustainability Assessment”, and “Sustainability Assessment Project”. The courses are complemented by skills training and the Master’s thesis. The skills training is very much hands-on and focuses on different methods considered essential in integrated sustainability assessment: modelling, participatory methods, scenario analysis, and multi-criteria analysis. In producing their Master’s thesis, students make use of knowledge, methods, and tools acquired during the SSP programme and apply these to a real-world sustainable development problem of their choice.

### *Students*

Each year, 15 to 25 students enrol in the SSP Masters programme, with students from abroad significantly outnumbering Dutch students. Students come from Europe (Belgium, Czech Republic, Germany, Italy, the Netherlands, and the United Kingdom), Africa (Democratic Republic of Congo, Kenya, Nigeria, and South-Africa), Asia (China, Philippines, Sri Lanka, and South-Korea) and America (Brazil, Colombia, Peru, and USA). The students also differ widely in their disciplinary background (e.g. Arts Culture, Arts & Sciences, Biology, Business Administration, Communication, Engineering, Environmental Sciences, European Studies, Geography, International Studies, Organisation Studies, Political Sciences, Public Policy, Social Sciences, and Sociology).

### *Educational format*

Problem Based Learning (PBL) has been at the core of all study programmes at Maastricht University since it was founded in 1974. The SSP Masters programme also embraces PBL, while one of its courses (Sustainability Assessment Project) is a form of project-based learning. PBL can be described as a “student-centred” approach: students mainly discuss the subject matter in small groups of 10-15 persons, tutored by staff, and only attend a few complementary lectures. The learning process is problem-driven, rather than theory-driven, and requires students to be active rather than passive.

## 22.3 SSP student perspectives on sustainable development

To answer the question how diverse the SSP students are in terms of their perspective on sustainable development, we have operationalised this concept using insights from Cultural Theory as a frame of reference.

### *Measuring perspectives*

Cultural Theory (Douglas, 1970; Thompson et al., 1990) is an empirically validated typology that allows different perspectives to be distinguished on a wide range of topics (for an overview of topics to which Cultural Theory has been applied, see Offermans, 2012 page 18-19). It argues that each person may have a slightly different perspective, but our main assumptions of how the world functions can be reduced to four archetypical perspectives, or combinations of these archetypes. A *perspective* can be defined as an internally consistent perceptual screen through which people interpret the world and which guides them in acting (van Asselt, 2000). Cultural Theory distinguishes four perspectives: Hierarchism, Egalitarianism, Individualism, and Fatalism.

- *Hierarchists* generally approach unsustainable practices as a management problem; strict regulations, expert knowledge, and top-down approaches will guide people into a more sustainable direction. Nature is robust within limits, more insight into its complexity is needed to solve persistent sustainability problems, and sustainability science contributes objective information.
- *Egalitarians* approach unsustainability as a distribution and inequality issue; to solve these issues we need more transparent information and involvement of all stakeholders. Nature is very fragile and there is a strong need to adapt human demands to the limited availability of natural resources.
- *Individualists* see sustainability problems as an opportunity for progress. Industries play a potentially important role by producing more sustainable products that outcompete harmful products; this benefits the economy and the environment. Strategies that do well in the short term will also do well in the long term.

- *Fatalists* argue that sustainability is beyond our control and very much determined by natural processes like floods and droughts. Our destiny is beyond our own control, and long-term processes of large-scale transitions cannot be managed. Objectivity is a fairy-tale that does not exist in reality.

Table 22.1 operationalises these four archetypical perspectives by identifying different topics (column 1) underlying the concept of sustainable development, and presenting, for each topic, the typical view (belief) from each of the four perspectives. To measure someone’s perspective, the person is asked to endorse the beliefs he or she agrees with. As real-life perspectives tend to consist of a mix of archetypical perspectives, zero, one, two, three or even four beliefs can be endorsed for each topic. Each endorsed belief equals a score of one. All endorsed beliefs together form a real-life perspective and yield a score for each archetypical perspective (vertical sum with every checked cell representing a score of one). We normalise this score to four and calculate x-, y-, and z-values that can be plotted in a standardized pyramid to indicate the position of a real-life perspective with respect to the four archetypes (see Figure 22.1) (for more information see Offermans (2012)).

**Table 22.1** The Perspectives Map to measure perspectives on sustainable development. This table was used to measure SSP students’ perspectives

	HIERARCHIST	EGALITARIAN	INDIVIDUALIST	FATALIST
Sustainable development as a concept implies	Stricter regulation and a connection of people, planet, and profit	Adapting demands and consumption, which will make us happier in the end	An opportunity for progress and advancement	A shift back in history and sacrificing present luxury (in wealthy countries)
Nature (Planet Earth)	Is robust within limits	Is very fragile	Is robust	Is dynamic and its robustness changes all the time
The current economic system	Is an integral part of sustainable development	Is a cause of/ threat to sustainability problems	Should be used better to promote and increase sustainable development	Can be seen as separate from sustainable development
Differences between the North and the South	Will remain as equality can never be achieved and would slow down action. Experts make sure the North also considers the interests of the South in decisions	Are caused by power inequalities, are hard to change, and a threat to sustainable development	Provide opportunities for both worlds and are therefore not necessarily bad (for sustainable development) The South has equal opportunities to compete in the market	Is a snapshot in time and may change in the next decades

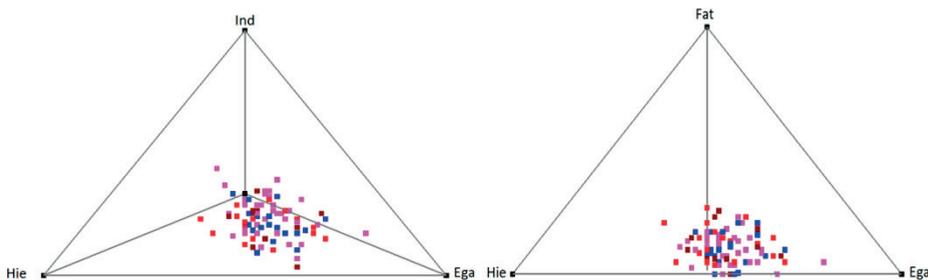
	HIERARCHIST	EGALITARIAN	INDIVIDUALIST	FATALIST
Environmental quality	Does not have priority in the South, where the environment has to be damaged in order to allow people to survive	Is a prerequisite for sustaining livelihoods and development, especially in the South	Is a result of (economic) development	Depends on geographic and geomorphologic conditions, and can hardly be changed by human action
Use of technology	Before implementation, technologies should be properly investigated by experts. I have a moderate trust in technology	I do not really trust technologies, as we cannot anticipate the long-term consequences of its use. I prefer behavioural change	I greatly trust technology; we should use available technologies, invest in new technologies, and apply them on a large scale	Technologies can make our lives more comfortable, but results from the past do not offer any guarantees for the future
Long-term versus short-term	Due to accountability problems and lack of commitment, the main focus for SD has to be on the mid-term	Although there are pressing issues in the present, the focus for SD needs to be on the long term	Decisions that are good in the short run will also be good in the long run. The focus of SD can thus be on the short term	We are unable to regulate issues in the long term. A focus on increasing short-term benefits is therefore the only option we have
Responsibility for more sustainability	Governments are responsible for implementing measures and regulations that should be based upon research findings and Advice	All people have a responsibility to behave in a more sustainable way.	Companies have an important responsibility as they can create the demand for more sustainable products and they can choose to abandon unsustainable alternatives	You cannot hold anybody responsible: governments can only look 4 years ahead, individuals always want to optimise their own lifestyles (first) and companies have to make profits
Bottom-up versus top-down transition	We need top-down initiation for a transition towards sustainability	We need bottom-up initiation for a transition towards sustainability	It is not so much a transition we need, but new, sustainable products that outperform traditional ones	Transitions will come and go and are beyond the control of governments, companies or individuals
Incremental change	Will lead us step by step to a sustainable system. We need small steps to find a new balance, to have everybody on board and to preserve support	Is not enough to prevent disasters. We need a fast and profound change of the entire system	Is a sign of a less efficient form of change. In case of outperformance, change is usually bigger than incremental	Cannot be controlled. Any change is too external and too big to be controlled or induced. Systems change in an unpredictable way

	HIERARCHIST	EGALITARIAN	INDIVIDUALIST	FATALIST
People	Won't change voluntarily into a more sustainable direction. They have to be "forced" by means of regulations, subsidies, taxes etc., including punishment of bad behaviour	Will change into a more sustainable direction if they are provided with the right and complete information	Will change into a more sustainable direction if industries offer cheap and more sustainable solutions	Will never change into a new equilibrium; they will always shift between sustainable and unsustainable ways of behaving
Demand and supply	Every person has the right to satisfy their needs. Industries have to meet demands and if necessary increase their supply	Every person has the right to satisfy their needs. Industries have to share the available supply more effectively	Everybody has equal rights to satisfy their needs, but it is everybody's own responsibly to guarantee the fulfilment of needs	Neither demand nor supply can be determined or set at a fixed rate. We can therefore continue with what we are doing now
Solving sustainability problems	Requires more insight into the complexity of the problems	Requires more insight into inequality and involving marginalised countries/parts of the world	Requires more creativity and courage	Requires more patience and a bit of luck
Role of sustainability science	Formulating empirically tested guidelines and regulations that will lead to a more sustainable society	Involving all stakeholders in research, informing people and increasing the human capacity to learn and do better in the future	Making people enthusiastic about sustainable products, creating a demand for sustainable products	Valorisation of knowledge from different disciplines
Nature of objectivity	Sustainable development can be measured by experts who make use of detailed indicators. These experts are able to formulate guidelines for a more sustainable system	By involving different stakeholders, we can get a sense of the level of sustainability, but universal guidelines can never be established	Although ill-defined and difficult to measure, it is possible to formulate guidelines for a more sustainable system	Sustainable development cannot be measured; neither can guidelines be formulated
Subsidising sustainable alternative technologies	Is a good sign from the government and a first and doable step towards a more sustainable system	Less harmful is still not enough. We need brand new products with zero harmful impacts instead of adapting existing products	Is very cost-inefficient. Harmful technologies should not be prohibited or discouraged but outperformed by newly invented products	Is useless; the best we can do is try to prevent or minimise negative outcomes of current processes

	HIERARCHIST	EGALITARIAN	INDIVIDUALIST	FATALIST
Climate change	Is mainly anthropogenic and can be forecast relatively well, and its consequences can be controlled	Is purely anthropogenic, may be worse than predicted, and prevention is the only solution to prevent disasters	Is both anthropogenic and natural. We should not worry about the consequences as we will have enough time to adapt	Climate is changeable; it may follow trend A today and trend B tomorrow.
Biodiversity	Should be preserved; I consider it important that my grandchildren can also still enjoy a high level of biodiversity	Should be preserved because it has an intrinsic value	Is a bit over-valued: people and nature will also survive with less variety	Is over-valued. Fauna extinction took place long before human existence; it cannot be prevented and is not harmful
Food shortages	Result from a lack of rules, regulations, and control. It is a supply problem	Result from unequal power distributions; it is a distribution problem	Result from poor management and not following a truly liberal market approach	Result from coincidental events like droughts, hurricanes, or floods

*Results*

All SSP students of the 2<sup>nd</sup>-5<sup>th</sup> cohort (2012-2015) filled in a questionnaire (based on Table 22.1) at the start of their Masters programme (N=94). Figure 22.1 presents the results of this baseline questionnaire on student perspectives in the two triangles, indicating the degree of similarity of their perspectives to the four archetypes. It appears that the different cohorts were highly comparable in terms of their perspectives, and that the dispersion of student perspectives along the four axes was quite limited. Most SSP students seemed to have a mixed Egalitarian-Hierarchical perspective on sustainable development. Individualism and Fatalism were weakly represented among the SSP student population.



**Figure 22.1** Student perspectives in comparison to the four archetypes: Hierarchism (Hier), Egalitarianism (Ega), Individualism (Ind) and Fatalism (Fat). The different colours of the dots represent the different cohorts (2012-2015).

## 22.4 Reflection

The diversity of perspectives on sustainable development in the SSP student population appears to be rather limited. Most students tend to have an Egalitarian-Hierarchical perspective. In hindsight, this may not be surprising, as the decision to apply for a Master's programme on sustainability and policy may be a self-selecting activity in terms of perspectives. Following Cultural Theory, we can expect Fatalists and Individualists to be less strongly attracted to topics concerning sustainability and assessments for policymaking. However, as professionals, the SSP graduates will inevitably have to collaborate with and do justice to people adopting Fatalistic and Individualistic perspectives. In order to prepare the students for this future, perspectives other than the Egalitarian-Hierarchist one that is dominant among the SSP students should be part of the SSP learning environment.

In addition to the perspectives of their peers, the students are also confronted with the perspectives of lecturers (including guest lecturers) and of clients and stakeholders in the Sustainability Assessment Project and Master's Thesis research project. We did not measure the diversity of perspectives on sustainable development in these groups, but we expect that the Individualistic and Fatalistic perspectives will be less represented here as well.

To stimulate the students' competence of dealing with different perspectives in a learning environment in which a diversity of perspectives is apparently not naturally present, we have to consciously introduce this diversity. Currently, the PBL sessions often challenge students to reflect upon sustainability issues from different normative positions. However, explicit recognition of, and reflection upon, different perspectives is as yet not embedded in the structure of the programme. The approach proposed by De Vries (2013) might be an effective didactic strategy. In his textbook *Sustainability Science*, the author introduces four archetypical perspectives and invites students to adopt and reflect on these different perspectives by providing a range of perspective-based statements on the major sustainability issues. Following De Vries, and throughout different courses, we could ask the SSP students to reflect upon sustainability issues from the different perspectives. Role plays may initially help the students perform this task, but after internalisation of the different perspectives, the competence to interact across the boundaries of different perspectives should become a natural part of a student's way of dealing with sustainability challenges.

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