

Teaching-learning materials compiled by the PARSEL consortium  
as part of an EC FP6 funded project (SAS6-CT-2006-042922-PARSEL).

Cooperating Institutions and Universities within the PARSEL-Project:



## Assessment for the Adaptation of the PARSEL Materials in Practice – selected by the PARSEL Group of Freie Universität Berlin

### Assessment Criteria

All PARSEL modules can be evaluated using the “Questionnaires for the Assessment of the ‘Motivational Learning Environment’ (MoLE)”; and the PARSEL group from Freie Universität Berlin recommends doing this.

To evaluate the adaptation of the PARSEL materials (especially those selected by the PARSEL group from Freie Universität Berlin) we recommend using the “Questionnaires for the Assessment of the ‘Motivational Learning Environment’ (MoLE)”. Therefore, you/the teacher collect data by asking the students about their own perceptions and assessment regarding the following “dimensions of the motivational learning environment” (Bolte 2006):

- Satisfaction,
- comprehensibility/requirements,
- subject orientation,
- relevance of the topics,
- students’ opportunities to participate,
- class cooperation and
- individual student’s willingness to participate.

Collect these data by focusing on the three following perspectives:

- 1<sup>st</sup> focus on the students’ perceptions and assessment in general,
- 2<sup>nd</sup> ask the students to tell you about their expectations in terms of how they would like the motivational learning environment in their science lessons to be and
- 3<sup>rd</sup> look at the students’ perceptions and assessment regarding a specific (the just experienced) science lesson.

To obtain specific insights into the assessment and the development of the motivational learning environments within the projects, we recommend questioning the students at least three times.

- 1<sup>st</sup> Before the start ( $t_0$ ) of the instruction using the PARSEL materials, the students are questioned on
- how they, looking back at their previous science lessons, regarded the motivational learning environment in general ( $t_0$ -REAL) and
  - how they would like the motivational learning environment in their science lessons to be ( $t_0$ -IDEAL).

- 2<sup>nd</sup> In the course of the instruction using the PARSEL materials ( $t_1$  to  $t_{n-1}$ ), the students are asked to evaluate
- how they, looking back at the just experienced PARSEL science lesson, regarded the motivational learning environment specifically ( $t_1$  to  $t_{n-1}$ -TODAY)

- 3<sup>rd</sup> At the end ( $t_n$ ) of the instruction using the PARSEL materials, the students are asked to evaluate
- how they, looking back at all the PARSEL science lessons, regarded the motivational learning environment in general ( $t_n$ -REAL)

This course of action provides insight into the motivational learning environment during past lessons. This can be an insight into the lessons before the PARSEL intervention ( $t_0$ -REAL), the PARSEL lessons in general ( $t_n$ -REAL) or into specific PARSEL lessons ( $t_1$  to  $t_{n-1}$ -TODAY).

Additionally, statements can be made on how students would generally like their science lessons to be ( $t_0$ -IDEAL).

	$t_0$ -IDEAL	$t_0$ -REAL	$t_n$ -REAL	$t_1$ -TODAY	...	$t_{n-1}$ -TODAY	
$t_0$ -IDEAL		$t_0$ -REAL / $t_0$ -IDEAL	$t_n$ -REAL / $t_0$ -IDEAL	$t_1$ -TODAY / $t_0$ -IDEAL	...	$t_{n-1}$ -TODAY / $t_0$ -IDEAL	$t_0$ -IDEAL
$t_0$ -REAL			$t_n$ -REAL / $t_0$ -REAL	$t_1$ -TODAY / $t_0$ -REAL	...	$t_{n-1}$ -TODAY / $t_0$ -REAL	$t_0$ -REAL
$t_n$ -REAL				$t_1$ -TODAY / $t_n$ -REAL	...	$t_{n-1}$ -TODAY / $t_n$ -REAL	$t_n$ -REAL
$t_1$ -TODAY					...	$t_{n-1}$ -TODAY / $t_1$ -TODAY	$t_1$ -TODAY
...						...	...
$t_{n-1}$ -TODAY							$t_{n-1}$ -TODAY

**Table 1**

The comparison of the data from each of the questionings provides an insight into several differentiated aspects (see Table 1). This can be, for example, in how far “wish” and “reality” coincide when considering the science lessons

- before the PARSEL intervention ( $t_0$ -REAL /  $t_0$ -IDEAL) and/or
- during specific PARSEL lessons ( $t_1$  to  $t_{n-1}$ -TODAY /  $t_0$ -IDEAL) and/or
- of the PARSEL intervention in general ( $t_n$ -REAL /  $t_0$ -IDEAL).

The process of analysing the data further allows the comparison of previously experienced science lessons with the PARSEL science lessons, so as to prove optimisation effects; for example:

- comparison of the previously experienced science lessons with the PARSEL science lessons in general ( $t_0$ -REAL /  $t_n$ -REAL),
- comparison of specific PARSEL science lessons with the PARSEL science lessons in general ( $t_1$  to  $t_{n-1}$ -TODAY /  $t_n$ -REAL),
- comparison of specific PARSEL science lessons with the previously experienced science lessons in general ( $t_1$  to  $t_{n-1}$ -TODAY /  $t_0$ -REAL).

Of course this course of action of analysing the data also allows the comparison of specific cohorts, e.g.:

- male and female students,
- well performing and less well performing students,
- students with and without a migration background,
- students of different age groups,
- specific class types (single-sex and coeducational; differently combined student populations; different types of teacher personality),
- classes from different types of schools,
- classes from different grades,
- etc..

The “Questionnaires for the Assessment of the ‘Motivational Learning Environment’ (MoLE)” are versatile and universally applicable. Questioning the students using the MoLE questionnaires is not particularly time consuming. Thus, further assessments can be added to the analyses of the learning environment in order to link verifiable effects (e.g. the correlation between the MoLE dimensions and the different dimensions of (scientific) competence and/or dimensions of scientific literacy). There are English translations beside the German versions.

**If you are interested in assessing the “motivational learning environment” in your science classes, please feel free to contact: [claus.bolte@fu-berlin.de](mailto:claus.bolte@fu-berlin.de).**

## References

Bolte, Claus (2006, April): As Good as It Gets: The MoLE-Instrument for the Evaluation of Science Instruction. Paper presented at the Annual Meeting of the National Association for the Research on Science Education (NARST), San Francisco, USA, April 2006 (Polyscript).

Bolte, Claus (2001): How to Enhance Students’ Motivation and Ability to Communicate in Science Class-Discourse. In: Behrendt, H. and others (Eds.): Research in Science Education - Past, Present, and Future. London: Kluwer Academic Publishers. Pp. 277-282.

Bolte, Claus (1995): Conception and Application of a Learning Climate Questionnaire based on Motivational Interest Concepts for Chemistry Instruction at German Schools. In: D.L. Fisher (1995, ed.): The Study of Learning Environments. Vol. 8. Curtin University. Perth, Australia, pp. 182-192.