

## ISU Report #1 on the PROFILES Students Gains Evaluation – Insights into the Analyses of the Total Treatment Sample

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### Aim and Purpose

Aim and purpose of this ISU (Georgian Team) report on the Students' Gains Evaluation is to present findings about the intervention of PROFILES group at ISU in the frame of Work Package 7: "Evaluation of Students Gains". Evaluation means analysing the MoLE questioner data which are collected during 2013-2014 years<sup>1</sup>.

### General Question of Interest regarding this report

The general question regarding this report is: to find out how does PROFILES intervention effect on students' motivation to learn science.

### Design of the Students Gains Evaluation for the ISU Report #1

In order to answer the general question mentioned above, the working group at ISU chose a (treatment-) pre-post-test design/a treatment control group design. Therefore, data has been collected at the same time by Pre- and Post- questionnaire in the intervention classes and control classes as well.

During the two trails of PROFILES intervention 10 different modules were implemented. Some of them were translated from PROFILES consortium partners and adopted, and some of them were created by the PROFILES teachers and ISU team.

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<sup>1</sup>Georgia joined the PROFILES project in January 2013, two years later then the other partners.



Here is the total list of implemented PROFILES modules:

- |   |  |
|---|--|
| 1. "Stumbling over Biodiversity"  | Translated in Georgian and adopted /Science, Biology   |
| 2. "Preventing Holes in Teeth"  | Translated in Georgian and adopted /Science, Chemistry |
| 3. "Brushing up on Chemistry"   | Translated in Georgian and adopted /Science, Chemistry |
| 4. "Traffic Accident: Who is to blame"                                      | Translated in Georgian and adopted /Science, Physics   |
| 5. "Cola and Diet Cola"   | Translated in Georgian and adopted /Science, Physics   |
| 6. "Cheese making: which to use – modern technology or nature's way?"       | Created by ISU team/ Science, Biology                  |
| 7. "What material keeps information for a long time?"                       | Created by ISU team/ Science, Biology                  |
| 8. "Is all that shines Gold?"   | Created by ISU team/ Science, Chemistry                |
| 9. "Why jam, comfiture and salted products aren't spoiled for a long time?" | Created by ISU team/ Science, Biology                  |
| 10. "Who likes Chocolate?"  | Created by ISU team/ Science, Chemistry                |

## Specific Question of Interest and Research regarding Report #1

In the context of the pre-post-test the students assess their regular and ideal classes, and after intervention of PROFILES, their PROFILES classes.

1. *How do students (who take part in the PROFILES intervention of the ISU group) retrospectively assess their previous science education?*
2. *How the students of the PROFILES interventions of the ISU team perceived and assess the motivational learning environment of the „PROFILES lessons“?*
3. *Which wishes and priorities do students link to their science education?*
4. *Which wish-reality-differences can be identified a) in the pre-test survey and b) in the post-test survey?*

And last but not least:

5. *Which (statistically significant) changes can be identified in the students' feedback of the pre-post-test / in the treatment and control group surveys a)*



regarding the possibly different REAL-assessments of the students and b) which (statistically significant) changes/differences can be discovered regarding the (calculated) wish-reality-differences (of the pre-test and the post-test analyses)?

These 5 research questions outlined in this context are supposed to help structuring the reporting of results achieved in the frame of the ISU Students Gains Evaluation(s).

## Total sample of the ISU Treatment Group

The total treatment sample of ISU evaluation consists of students **1233** from 36 different schools.

Table 1. PROFILES modules Sample for the ISU Students' Gains Evaluation Report #1

		No. of Students <sup>2</sup>		
	Modules	REAL (Pre-Test)	IDEAL	REAL (Post-Test)
Treatment Group	<ul style="list-style-type: none"> <li>• "Stumbling over Biodiversity"</li> <li>• "Preventing Holes in Teeth"</li> <li>• "Brushing up on Chemistry"</li> <li>• "Traffic Accident: Who is to blame"</li> <li>• "Cola and Diet Cola"</li> <li>• "Cheese making: which to use – modern technology or nature's way?"</li> <li>• "What material keeps information for a long time?"</li> <li>• "Is all that shines Gold?"</li> <li>• "Why jam, comfiture and salted products aren't spoiled for a long time?"</li> <li>• "Who likes Chocolate?"</li> </ul>	2013 year		
		739	739	650
		2014 year		
		494	494	450
<b>Total Treatment</b>		<b>1233</b>	<b>1233</b>	<b>1100</b>
Control Group <sup>3</sup>	N/A	2013 year		
		341	341	339
		2014 year		
		407	407	416
<b>Total Control</b>		<b>748</b>	<b>748</b>	<b>755</b>

<sup>2</sup> Deviation regarding the numbers of cases (data set) for pre - and post- trails are caused by attendance the classis.

<sup>3</sup> In addition, ISU collected data for controll groups from 36 different schools.

## Results and Findings of the ISU (Total) Treatment Sample

Figure 1 provides the mean scores of the MoLE scales – differentiated by the pre- and the post-test treatment group analyses of the students' REAL-assessments and IDEAL-assessments of the ISU total<sup>4</sup> sample.

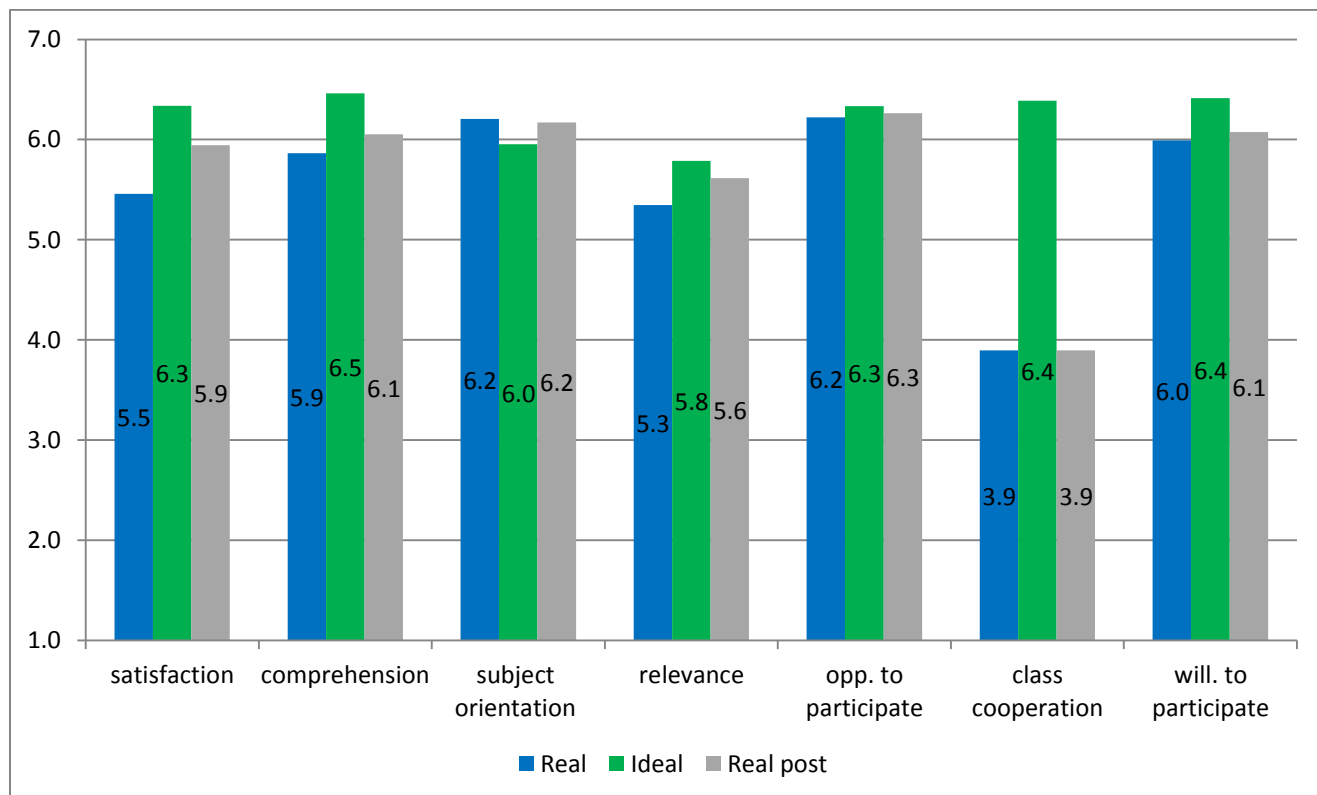


Fig. 1. Mean scores of the seven MoLE scales differentiated by pre- and post-test / treatment group analyses – here of the ISU sample.

### Focusing on the students' priorities and wishes regarding science lessons – Analyses of the students' feedback on the MoLE IDEAL-version:

The students' wishes regarding science expressed in their feedback on the scales of the MoLE questionnaire's IDEAL-version is that the priorities of the students are given to comprehension (M= 6.5, Range #1) and willingness to participate (M= 6.4, Range #2) and class cooperation (M=6.4, Range #3). Next priorities are given to

<sup>4</sup> In this report total sample is only for the second trial cases for the ISU PROFILES intervention. The data from the first trial wasn't statistically significant.

**Focusing on the students' assessments regarding their regular science lessons (before the PROFILES intervention started /of the control group)-  
Analyses of the students' feedback on the MoLE REAL-version in the pre-test/control group:**

**Focusing on the students' assessments regarding their PROFILES science lessons of the PROFILES intervention - Analyses of the students' feedback on the MoLE REAL-version in the post-test of the treatment group:**

**Comparing the students' assessments regarding the PROFILES science lessons before and after the PROFILES intervention – Analyses of the pre- and post-test-data sources:**

For the analysing the pre- and post-test findings we compare wish-to-reality differences (Fig. 2). For most of variables we found positive changes, but for some there were not observable progress. The significant progress is for satisfaction, comprehension and relevance. There are no changes in assessing the class cooperation and opportunity to participate.

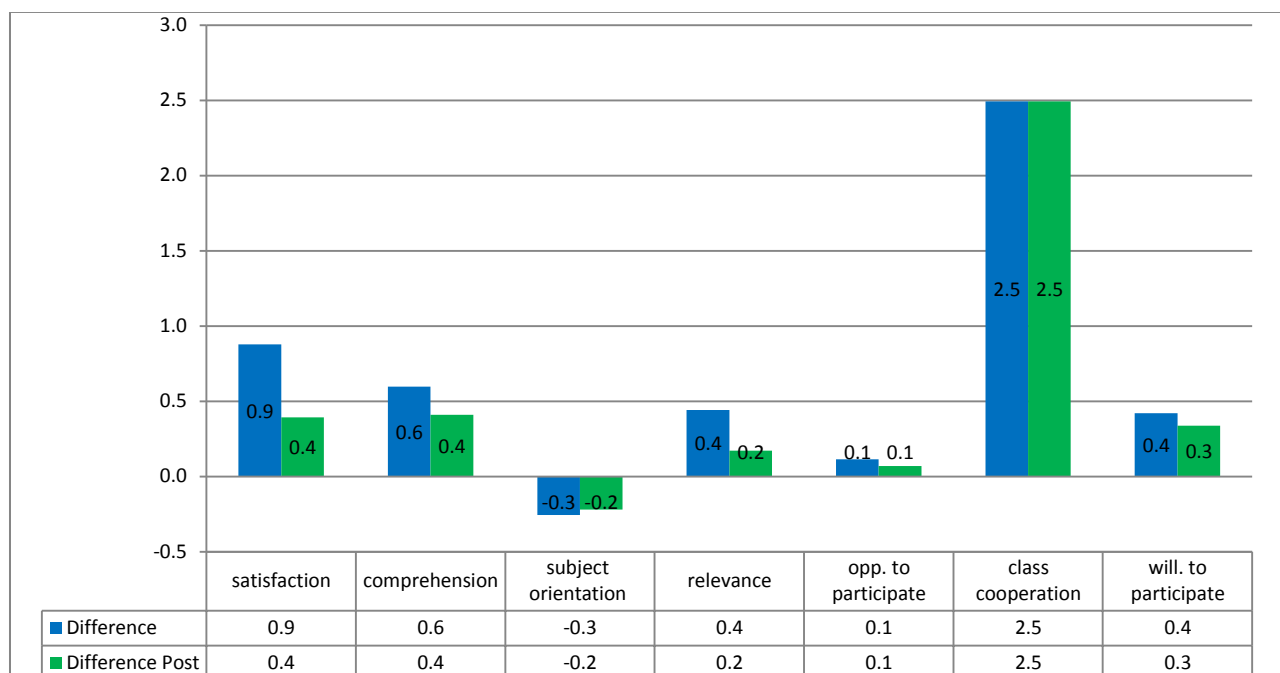


Fig. 2. Calculated wish-to-reality-differences regarding the seven MoLE scales differentiated by pre- and post-test analyses of the students' assessments (IDEAL-minus-pre-REAL-assessments and IDEAL-minus-post-treatment-group-REAL-assessments) – here of the ISU sample.

## Conclusions regarding the MoLE analyses

By means of this students' gains evaluation the PROFILES working group of ISU are able to conclude that PROFILES intervention was successful in Georgia. The mean scores of the students' motivational learning environment assessment are in four cases higher in the post-test than they were in the pre-test, we can conclude that PROFILES intervention in Georgia will lead to increase of students motivation to learn science. With the comparing of the scores of students' assessment the biggest difference between the pre- and post- real classes is visible for satisfaction. It means that PROFILES intervention promotes students satisfaction during the learning process..



## Outlook

In this report of the ISU Students' Gains Evaluation we have introduced the analyses of total sample (second trial). In the next reports of the ISU team we will focus on the levels of education (No.2) and rural-urban (No.3) differences.