

Elaboration and validation of the questionnaires and plan for analysis

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Congrès SCEE à Winnipeg
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Objective of the presentation

To describe the validation process for the questionnaire, and the types of analysis strategies that could be used to aid in interpreting the results

Presentation plan

- Development of the tool
- The three-step validation process
- Plan for data analyses
- Contributions of the research

Development of the tool

- Two versions of the questionnaire are in the process of being developed
- The *Reading to Learn* questionnaire
 - was created first
 - in English and French
 - the two language versions are being developed and adjusted simultaneously to ensure they remain parallel
- The *Conducting Research* questionnaire
 - was developed next, in English
 - using the base structure of the *Reading to Learn* version
 - adding items to match a *Conducting Research* activity
 - The translation into French remains to be completed

The validation process: Step one

- The first step in the validation process has been to evaluate the clarity of the instructions, example activity, questionnaire items, and response formats from the perspective of students.
- For the *Reading to Learn* questionnaire:
 - January 2003, the French-language version was piloted tested in Québec
 - Parallel changes were made to the French and English versions on the basis of that pilot
 - February 2003, the revised English language version was pilot tested in British Columbia
 - Revisions were made in parallel to both language versions
 - Participants were 12-14 years old (7e année in Québec; 8th grade in BC)
 - They completed a *learning through reading* activity assigned in their classrooms (over a 3 to 5 day period)

The validation process: Step one (cont' d)

- For the *Conducting Research* questionnaire:
 - Summer of 2003, English language version pilot tested in BC
 - Refinements were made to both the *Reading to Learn* and *Conducting Research* questionnaires based on the results of this pilot
 - Participants were first and second year biology students at the University of British Columbia
 - They referred to an example activity presented on a separate sheet of paper while responding to the questions, rather than actually doing the activity

The validation process: Step two

- In the second step in our validation process, we collected data that allowed for preliminary statistical analyses of the structure of our questionnaire:
 - to examine the distribution of responses (frequency analyses)
 - to identify when items might be structured into dimensions (factor analyses)
 - to assess the ability of items to discriminate between groups of students (comparative analyses)
- For the *Reading to Learn* questionnaire,
 - Data were collected in April 2003 in Québec from 188 students aged 12 to 16 years
 - Students responded to the French version of the questionnaire while referring to an example activity
- For the *Conducting Research* questionnaire
 - Preliminary analyses are based on data collected in the Fall 2003 with a sample of 196 first year biology students
 - Students responded to the English version of the questionnaire while referring to an example activity

The validation process: Step three

- As a third step in our validation process, we have collected data from larger samples within the context of research projects:
- The NANS project in Quebec (Janosz, 2003) using our *Reading to Learn* questionnaire
 - Data have been collected (and a range of other measures) across 82 secondary schools in disadvantaged neighborhoods
 - Roughly 30,000 and 8,000 students completed the French and English language versions, respectively
 - Our analyses are based on a subset of these two samples (5,700 in French and 4,240 in English)
- The Biology Project at UBC (Butler et al., 2004) using our *Conducting Research* questionnaire
 - Along with a set of qualitative measures, we examine changes in first year Biology students' approaches to learning before and after participating in an inquiry-based lab course
 - We are using various combinations of the pretest (for validation of questionnaire structure) and posttest (to test questionnaire sensitivity) data in our validation study

The validation process: Step three (cont' d)

The large data sets collected within these projects is allowing use of a variety of statistical techniques to finalize the validation of our questionnaires

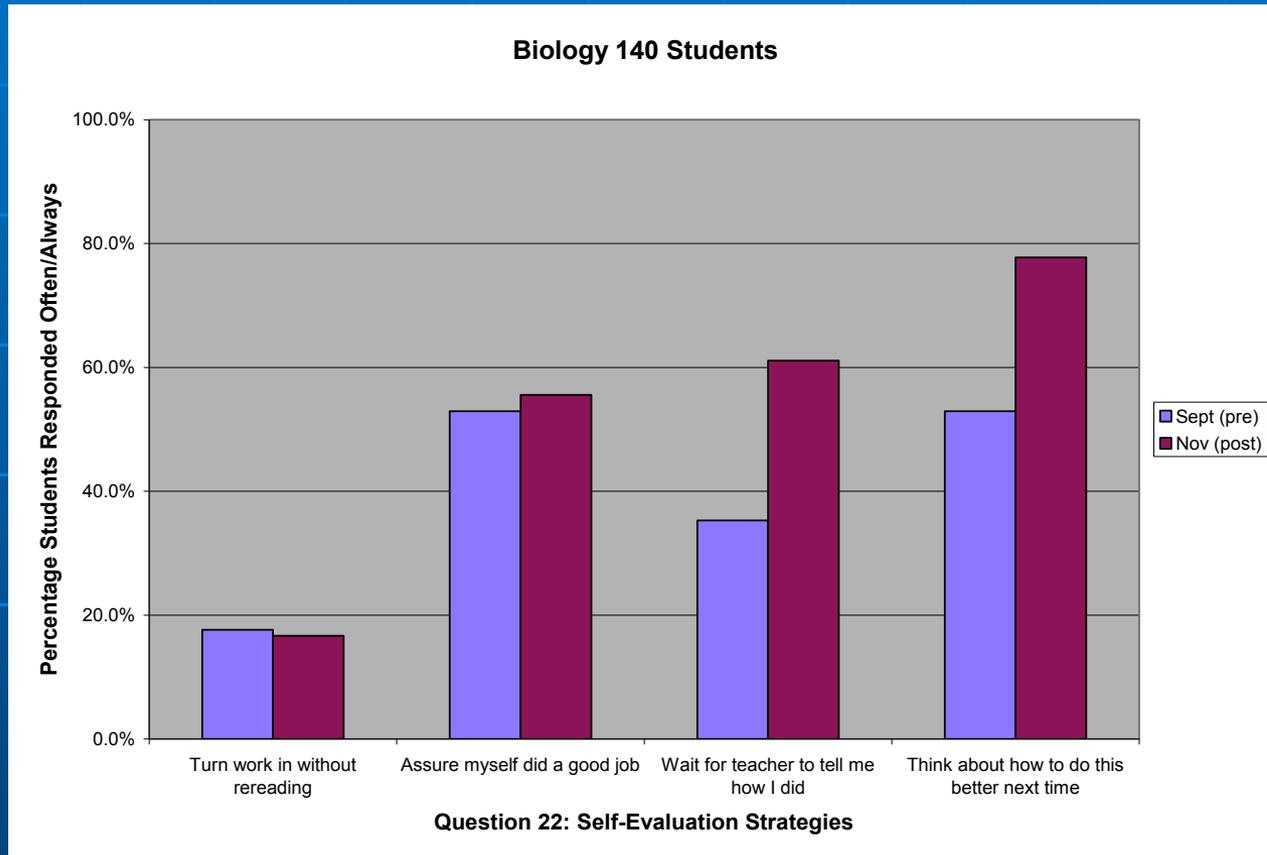
- Frequency
- Factorial
- Comparative
- Correlational
- Cross-tabulations
- Cluster analyses

Example of frequency analyses for task interpretation by secondary students in special education classrooms (N=111)

When I have to read in order to Learn, I am being asked to...	Students who responded “often” or “almost always”	
	Number	Percentage
a) read the texts	48	44%
b) find important details or facts	71	65%
c) understand the subject matter	74	69%
d) find information that interests me most	45	53%
e) get a general idea about the subject	40	37%
f) understand the information that I read	87	81%
g) See how information about the subject goes together	48	45%
h) apply what I read to different situations or problems	43	40%
i) memorize information	75	69%

We are finding student responses across the scale (e.g., 1 to 4) and across options (a-i), and meaningful patterns of results

Students' self-reported strategy use when *Conducting Research* at the beginning and at the end of a first-year biology course



The tool appears to be sensitive to pre-post changes in responses

Comparing activity interpretation by students in special education classrooms to that of their peers at the secondary one level (first year secondary).

When I have to read in order to Learn, I am being asked to...	Mean Rank	
	Secondary 1	
	Special Education	Peers
a) read the texts	109.49	100.01
b) find important details or facts	104.13	108.00
c) understand the subject matter	103.04	107.05
d) find information that interests me most	107.58	100.24
e) get a general idea about the subject	108.04	101.75
f) understand the information that I read	94.90	115.80 ¹
G) see how information about the subject goes together	106.58	102.33
h) apply what I read to different situations or problems	108.06	100.73
i) memorize information	116.98 ¹	94.27

¹ Denotes mean ranks that are significantly different from each other based on a Mann-Whitney's U, $p < .01$.

The tool appears to capture predicted group differences

Plan for Data Analysis

- *Frequency analyses* to describe students' approaches to learning
- *Cluster or profile analyses* to identify patterns in students' strategy use and self-regulation
- *Comparative Analyses* using non-parametric and/or descriptive and inferential statistics for pre-post or group comparisons
- *Correlational analyses* to examine relationships among components (e.g., between prior knowledge, self-perceptions of competence and control, emotions, strategy use, etc.).

Plan for Data Analysis

- *Multiple regression or structural equation modeling* to examine relationships among our components of self-regulation, the contexts in which students learn (e.g., classroom climate, classroom discourse, evaluation practices), and outcomes (e.g., task performance).
- *Cross-tabulations* to find relationships between strategies and intentions
- *Qualitative approaches* to collecting and interpreting data can be used to complement our statistical analyses.
 - responses to our open-ended question on activity interpretation
 - interviews, focus groups, think alouds, observations, documents, artifacts, traces

What can we learn?

- How students self-regulate learning in different activities and contexts
- Connections among motivation, emotions, cognition, and metacognition during students' engagement in learning
- How individual learning histories and characteristics shape approaches to learning
- Understanding of how self-regulation is situated in sociocultural contexts (e.g., given school climate, classroom instruction or evaluation, etc.) and activities and domains

Panel Discussion

- Focus: Assessing, Describing, and Promoting Self-Regulated Learning: A Pan-Canadian Perspective.
- Experts on self-regulation and special education will comment on our presentations and discuss their own work, focusing on the following issues:
 - understanding the multiple interactions between motivation, affect, volition, cognition, and metacognition;
 - complementary strategies for assessing self-regulated learning; and
 - understanding students' approaches to learning that might promote or inhibit success.

Questions et discussion

- Une période de questions et de discussion servira à dégager des piste de réflexion, de recherche et de formation

Coordonnées

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