Laborare Schola

NETWORK LEARNING LAB

eFORMATIVE

ONLINE FORMATIVE EVALUATION IN LEARNING NETWORKS

A New Methodology and Practice

Network Learning Lab's main activity has been to collaborate on design and evaluation methodology in connection with quality development of learning processes. A main objective is to obtain descriptive information of knowledge on learning that is supportive for the learners and bring forward facts helpful for making improvements.

Online formative evaluation, *"eFormative"*, started at Stanford University with particular interest on project based learning and has been under development since 1994-95. At Norwegian University of Science and Technology, NTNU, the ideas and experience were inspiring for the introduction and development of project based learning at engineering education.

The online formative evaluation concept has during the past years of experimental activity brought forth rich information on students experience in different fields of higher education, e.g. students': - investment in studies; - benefit of study activities; - perception of learning objects, - learning objectives and learning environment.

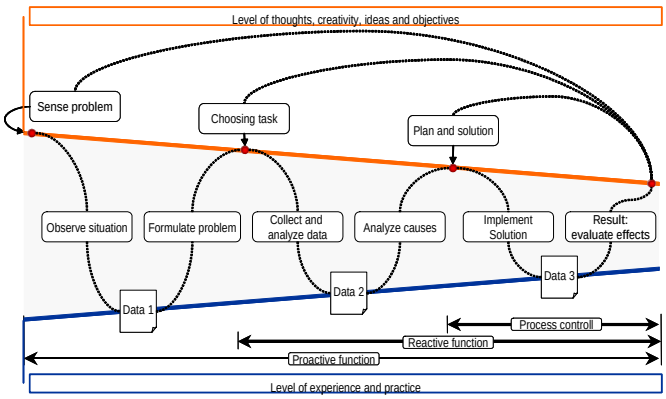
More than 1000 students, 50 teachers, and 40 courses have taken part in the experimental projects. The learning process is continuously assessed – *in real time* - and followed up by proactive, reactive and controlling functions. The findings make a basis for immediate improvements, more complex (systemic or organizational) changes, as well as a platform for further research.

- The key factor in the evaluation and assessment of quality in higher education is the active students' observations and self assessment;
- The formative evaluation is an evaluation for learning contrary to the summative evaluation of learning;
- An evaluation ensuring quality must in regard to education consider the entire study more than individual courses.

There is a demand for a "new" practice for assessment and evaluations to ensure quality development, relevance of competence, and learning outcome.

Concept - the student experience

The eFormative concept is inspired by Total Quality Management, where the process is followed up by proactive, reactive and controlling functions.

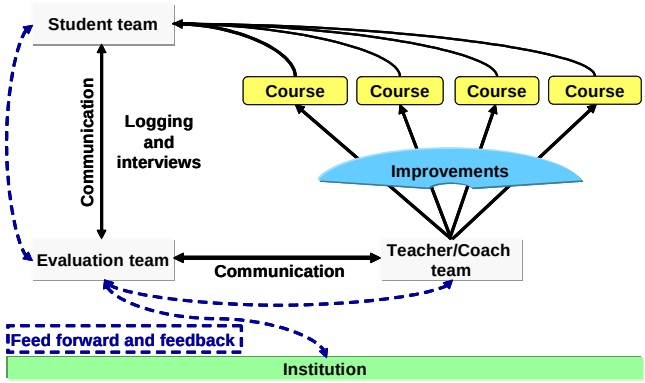


The concept for eFormative evaluation

The *proactive* stage in the evaluation is evident throughout the entire process. It is important in order to sense a problem, explore the situation, and formulate task. Implicit the concept is focused on a learning process, whose ideas and activities could be improved. Next, the *reactive* stage points to the need to look at the progress and evaluation of the suggested theme. The process *control* comes in the last part of the process in order to make sure that the solution to the task works as intended.

Network for eFormative evaluation

The primary informants, students' and teachers', in the process are both subjects and objects in the face of the evaluation group that is responsible for the eFormative network activities.



The eFormative evaluation network

eFormativeTool

The *eFormativeTool* is an internet application that makes it possible to record spontaneous observations and evaluate activities. The descriptive information on students experience is visualized in graphs, frequency tables, bi-variate or multivariate tables or plain text. The projects have explored students': study hours; benefit of the learning activities; study activities; distribution of grades; comparison of grades / study hours / studypoints (credits); study effectiveness; and added knowledge (based on the Lucas model). Furthermore qualitative data has been collected on students': motivation, in general and especially according to learning objects or modules, and learning objectives for courses and study program; learning environment; quality development; and well-being. In addition to the students' possibilities for "open question" addressed for the evaluation, teacher or student team.

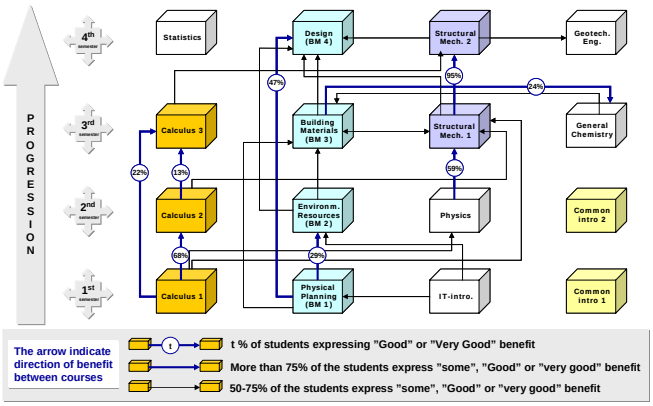
Findings - what to expect

Improvements and changes are often based and conducted on a constructed "average" student. In formative evaluations it is interesting to view the self assessment of every student.

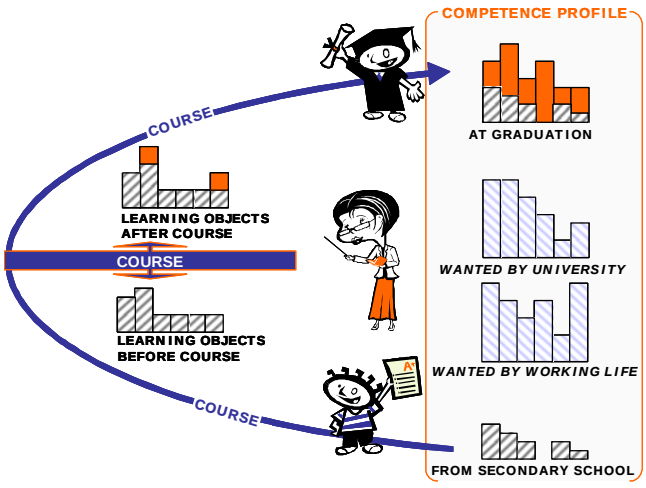
Descriptive information and feedback of the students' study activities make solid basis for improvements. Findings show that:

- the upper quarter in a class invests often more than twice as much time in their studies compared with the lower quarter;
- there is a significant gap between the curriculum time schedule and the real time invested in study activities;
- the students' motivation relates to learning objects and the learning objective according to study program;
- students' awareness of learning objectives, application of learning objects and self-evaluation of study activities inspires and motivates students to contribute to quality development as long as feedback and action actually influence their ongoing studies.

Student's perception of benefit of courses in the first 4 semesters at IVT, NTNU (2001-2003)

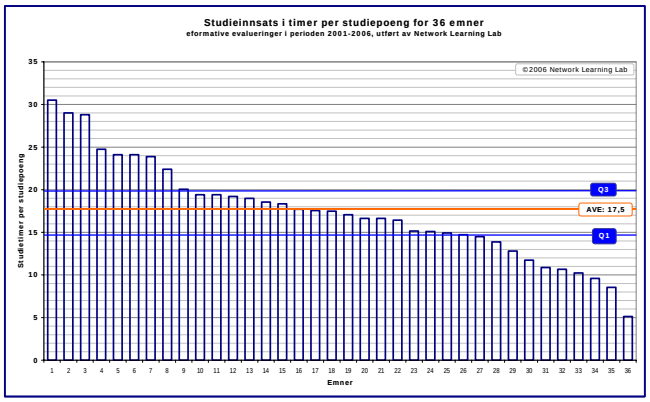


Progress and lack of progress in the learning environment



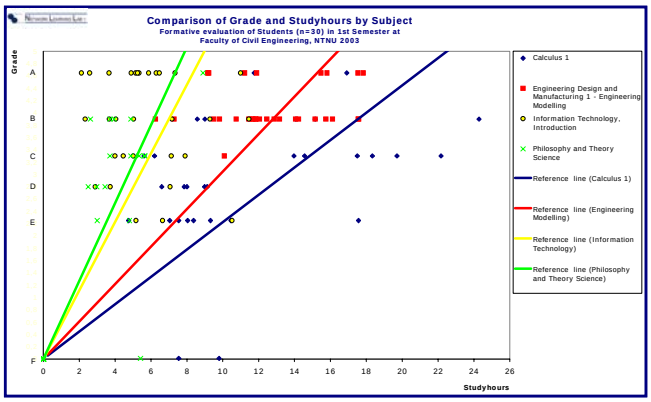
Building a competence profile

Educational institutions partly base their resources and financial support for courses by the variable "studypoints" (credits). The findings from evaluations projects, counting 36 courses, tells us that the students' are well aware of the differences between the courses with "equal" study points. The study hours per study point may vary from 6 to 30 hours. At most Norwegian institutions the normative study hours per study point varies from 25-35.



Registered study hours per study point at 36 courses with equal normative study points ("time-for-time-principle")

The investment of study hours per study point does not correlate to the grade at exam. The variation between courses show that study points is an uncertain factor for measuring "added knowledge".



4 "equal" courses compared by grades and study hours

Winning development

The formative evaluation of the learning process should be valuable for all the learners, e.g. students, teachers, coaches, and organizations. A successful development points to a future where:

- It is necessary to engage students in quality development in higher education;
- Students are responsible for own learning, i.e. influence and reflect on own learning in subjects and their entire study, and improve their own and the following students "total study experience";
- Teachers adapt and assure that teaching, content and methods, is in accordance with their students. They document the quality of the teaching, i.e. disseminate efforts and results, teaching methods, and possibilities for improvement and known obstacles for doing so.
- Students' being a real resource in education does create time for teachers' research.
- The institution is supportive to "learning networks", i.e. relationship between evaluators (internal and external), teachers and students and their efforts to increase the knowledge about learning and point out directions for quality development in higher education and in learning organizations.
- Study programs have a learning environment and content that matches and stimulate the demands for students' learning and teachers research and development;
- Study programs are – by transparency – adjusted according to the demands in working life and society;
- New attractive education programs that are profession-oriented and practice-oriented are developed in areas of science and technology.
- Online formative evaluation is a supplement for quality development for learning processes. Findings indicate a great potential for improvements, in particular improvements may be implemented by a stronger network between courses, between academia and working life. Results from the formative evaluation may be a supplement to the institutional and national Quality Assurance System.

Contacts

For more information on online formative evaluation, concepts, findings and experimental projects, please contact *Rolf Lenschow* or *Harald Lenschow* at Network Learning Lab.