Chapter 1: Appendix 2. Kirkpatrick’s four-level model for assessing training effectiveness

According to Kirkpatrick’s (1994) four-level model for assessing training effectiveness, evaluation should always begin with level one, and then, as time and budget allows, should move sequentially through levels two, three, and four. The levels are:

- **level 1 – reaction**, a measure of participants’ initial reactions to a course, usually assessed through surveys;
- **level 2 – learning**, a measure of the amount of information that participants learned, usually assessed using criterion-referenced tests;
- **level 3 – transfer**, a measure of the amount of material learned that participants actually use in everyday work, usually assessed using observations and interviews with co-workers and supervisors; and
- **level 4 – value to the organisation**, a measure of the financial impact of the training course on the bottom line of the organisation, assessment for this level is not clearly defined.

Kirkpatrick revisited (1996) points out that ‘the model doesn’t provide details on how to implement all four levels. Its chief purpose is to clarify the meaning of evaluation and offer guidelines on how to get started and proceed’. Many have interpreted the model as steps one goes through in the evaluation process and believe that as one moves from level 1 to level 4, the evaluation process becomes more difficult and time-consuming, although it provides information that is of increasingly significant value. Level 1 is perhaps the most frequently used measurement because it is the easiest to measure. However, Bernthal (1995) questions the existence of a hierarchy of superiority within the model and argues that ‘each level can provide equally valuable information depending on the type of trainees being evaluated’. Hesketh (2001) also questions the notion of there being any strong causal connection between the four levels.

Therefore, although we chose Kirkpatrick’s four level model as a guide for the project, we adapted it to suit our evaluation needs. We interpreted the levels to be:

- **level 1 – reaction**, a measure of student satisfaction, assessed through questionnaires, surveys, focus groups, etc. Information obtained through this level of evaluation was used to: guide modification of and enhancement to the teaching materials; guide changes aimed at improving the student learning experiences within the targeted first year units of study; and assist in evaluation of the underlying model for teaching reform.
- **level 2 – learning**, a measure of skills and knowledge learned, assessed using criterion-referenced tests, pre-tests/post-tests, observations, interviews, etc. A very noticeable example of results at this level has been observed in the Biological Sciences sub-project – the quality of student posters for the Human Movement and Health Education students in 2001 were outstanding, demonstrating increased understanding and application, which appeared to reflect the improved contextualisation of material delivered. This is a good illustration of Carnevale and Schulz’s (1990) observation that the measurement tools used to evaluate learning should reflect the objectives of the unit of study. Information obtained through this level of evaluation was used by teaching staff to: consider possible modifications to their teaching practices; and review the alignment between the unit of study objectives and the teaching materials and learning experiences being offered.
- **level 3 – transfer**, a measure of transfer of the knowledge, skills and understanding gained in the first year unit of study to an appropriate second year unit of study, assessed using observations, interviews, surveys, etc. For sub-projects where it was appropriate we correlated the second year student’s awareness of relevant objectives of first year units of study with his/her second year results. With reference to level 3, Boverie et al. (1994) suggest ten guidelines for designing training that ensures transfer. Five of these can be translated to apply to university education:
  - build a plan for transfer into the unit of study from the outset;
  - make sure that the learning environment provides positive incentives to apply the knowledge and understanding gained in the unit of study;
  - use specific topics that are relevant and career related;
  - ensure that learning activities during the unit of study clearly match the situation in which they will be applied in future units; and
  - consider transfer as an objective of the unit of study, thus objectives are not met until transfer has taken place.

These guidelines were considered when analysing the evaluation results and reporting back to unit of study coordinators, etc.
Chapter 1: Appendix 2. Kirkpatrick’s four-level model for assessing training effectiveness

Information obtained through this level of evaluation was: testing the alignment between the contextualized first year general science units of study and the second year professional degree units. If successful, the students benefit by having a better understanding of the relevance of the science discipline area within their professional degree program.

- level 4 – dissemination and value to the organisation, a measure of cost effectiveness and organisational benefits, such as, does the innovation meet the long and short term goals of the organisation, has the innovation produced the results the organisation expected. Trapnell (1984) suggests that ‘impact evaluation is not a science’ and therefore encourages the use of available secondary data, which may include observation, comparison with the situation prior to the innovation, student satisfaction, student retention, student attendance, student participation and student enrolment. Thus the more qualitative approaches using action research and critical incidents were seen to be a better approach to this level. These approaches offer the advantage of observing and documenting the impact of learning activities associated with the innovations. This may include the impact on academic staff, students, departments, faculty, college, university, and even science teaching and learning.

Level 4 is very important, for demonstrating to the University that cross-discipline projects, such as this one, can not only be successful, but also deliver long term benefits to the University. Placing a ‘value’ on the innovation however is difficult. For the purpose of this project ‘value’ was seen as: use within other departments and use within other organisations both nationally and internationally; an increased emphasis on communication and flexible delivery; a move to students taking responsibility for their own learning, increased self- and time-management; a focus on knowledge, skills and competencies and flexible assembly of them; and therefore an improvement in learner behaviours.

Reference list
Baskin, C. (2001) Using Kirkpatrick’s four-level-evaluation model to explore the effectiveness of collaborative online group work, ASCILITE conference proceedings, 37-44.
Winfrey, E. C. Kirkpatrick’s Four Levels of Evaluation http://coe.sdsu.edu/eet/Articles/k4levels/start.htm