**Appendix 2. Assessment Development**

The four-level Kirkpatrick model is a good tool for assessing program/project effectiveness (Figure 2). According to this model, evaluation should always begin with level one, and then should move sequentially through levels two, three, and four. Information from each prior level serves as a base for the next level's evaluation. Each successive level represents a more precise measure of the effectiveness of the training program, but at the same time requires a more rigorous and time-consuming analysis:

* Level 1 Evaluation - Reactions: Just as the word implies, evaluation at this level measures how participants in a training program react to it. It attempts to answer questions regarding the participants' perceptions - Did they like it? Was the material relevant to their work? This type of evaluation is often called a smilesheet. According to Kirkpatrick, every program should at least be evaluated at this level to provide for the improvement of a training program. In addition, the participants' reactions have important consequences for learning (level two). Although a positive reaction does not guarantee learning, a negative reaction almost certainly reduces its possibility.
* Level 2 Evaluation - Learning: Assessing at this level moves the evaluation beyond learner satisfaction and attempts to assess the extent students have advanced in skills, knowledge, or attitude. Measurement at this level is more difficult and laborious than level one. Methods range from formal to informal testing to team assessment and self-assessment. If possible, participants take the test or assessment before the training (pretest) and after training (post-test) to determine the amount of learning that has occurred.
* Level 3 Evaluation - Transfer: This level measures the transfer that has occurred in learners' behavior due to the training program. Evaluating at this level attempts to answer the question - Are the newly acquired skills, knowledge, or attitude being used in the everyday environment of the learner? For many trainers this level represents the truest assessment of a program's effectiveness. However, measuring at this level is difficult as it is often impossible to predict when the change in behavior will occur; thus, requiring important decisions in terms of when to evaluate, how often to evaluate, and how to evaluate.
* Level 4 Evaluation - Results: Frequently thought of as the bottom line, this level measures the success of the program in terms that managers and executives can understand -increased production, improved quality, decreased costs, reduced frequency of accidents, increased sales, and even higher profits or return on investment. Determining results in this level is difficult to measure, and it will require an accumulation of data over several years to address the impact of the course on the training program.



Figure 1. Kirkpatrick’s four-level model (each successive evaluation level is built on information provided by the lower level.

**Evaluation and Verification Indicators**

The A-E-I-O-U framework for evaluation is particularly useful in assessing extension/outreach programs; project objectives will be organized into evaluation questions in five areas:

* Accountability:
	+ Did the project team do what it said it was going to do?
	+ Establish research and education collaborations
* Effectiveness:
	+ How well did the research components meet the objectives of the project?
	+ How well did the education activities meet the objectives of the project?
	+ What changes need to be made to serve the general public's interests?
* Impact:
	+ What changes have occurred as a result of the project?
	+ How have faculty and students learned from the process?
* Organizational content:
	+ What organizational policies or procedures or circumstances helped to achieve the goals and objectives of the project?
	+ What made it difficult to achieve project goals and objectives?
* Unanticipated outcomes:
	+ What happened that was not planned or expected?