Project Introduction

The goal of this project is, in short: To measure the impact of the College of Textiles Extension Program. The project was initiated by Cliff Seastrunk, director of Textile Extension. Tony Ingle, an independent training measurement consultant was brought in to conduct the project, under the direction of Wade Carter, director of In-Plant Programs. Jointly, it was decided to focus the measurement effort on a suitable host company participating in the In-Plant training program.

The assessment was to make use of the well-respected “five levels” approach for measuring the impact of training. The five levels of training impact are:

1. Reaction: Did they like the class?
2. Learning: Did they learn the material?
3. Application: Did they use the material? Did behaviors change?
4. Results: What were the results?
5. ROI: What was the return on investment?

Because the extension program relies on state government monies for a portion of its funding, there was a further interest expressed in determining the impact of the training on the local area and state of North Carolina if possible. Because such longitudinal studies require a great deal of time and resources, it was decided to gather data on this impact from a qualitative standpoint based on input from the host company. One innovative method for achieving this, as suggested by Tony Ingle, was to find a host company willing to use the Balanced Scorecard methodology to directly tie the training to quantitative organizational goals. Unfortunately, the team was unable to find such a host company.

To summarize the objective of the project, three questions were to be answered in terms of the extension program’s ability to influence each area:

1. How does the training impact a firm’s ability to create value for customers?
2. How does the training impact a firm’s ability to develop and retain employees?
3. How does the training impact a firm’s ability to contribute to the economy of North Carolina?

A measurement program was created by project manager Tony Ingle (see Figure 1). Utilizing this methodology, three exams would be administered to each group of class participants: 1. a Preview exam before class, 2. a Review exam directly after class, and 3. a Follow-up 2 to 6 months after the class to determine how much of the classroom knowledge was retained after an extended period. These exams would gather data at four of the five levels of assessment. Final measure of Results and ROI would then be made by interviewing senior managers at the host company.
Assessment Method

![Diagram showing the assessment method with steps: Preview → Program → Review → Follow-up → Management Interviews.]

Figure 1: Training Assessment Method

Project Timeline

As originally planned, the project was to take place in three phases.

- **Phase 1:** Brainstorm and Write Proposal  
  (2 weeks)
- **Phase 2:** Design the Measurement Program  
  (1-2 months)
- **Phase 3:** Implement the Measurement Program  
  (12 months)

Since the College of Textiles Extension group cannot normally predict exactly when client companies will need courses, it was difficult to arrange the assessment program exactly according to schedule. However, after one trip by Wade Carter and Tony Ingle to firm in the Western part of NC proved fruitless, Wade Carter arranged with Jane Doe of XYZ Company to use the on-going Spun Yarn Manufacturing program as a test bed for the measurement program.

Phases 1 and 2 were completed according to schedule. Phase 2 began with Wade Carter creating 40 content questions based on the training course, which class participants would be expected to know by its end. The questions were demanding. Tony Ingle developed the demographic and attitude questions which would be found on the first page of each exam. Phase 3 began in November 1997. Over the next 17 months, there were four batches of students who took the Spun Yarn Manufacturing Class. This yielded four opportunities to gather data, two of which were successful. The results are listed below.

Project Results

Batch 1: Nov/Dec 97. 19 students managed to take all three exams. Interim data was also collected after the Review exam and presented in a report entitled XYZ Company Preview Report. Between exams, several of the content questions were altered or corrected where necessary to provide more accurate and useful data. It was further decided to give partial credit for questions in order to more accurately reflect participants' knowledge levels. A second report entitled "XYZ Company Review Results" was published in February of 1998 regarding Batch 1 results. A table was created which showed which questions had caused participants the most difficulty. This analysis was then used by the class instructors to refocus the class material to enhance the learning impact of future classes. New demographic and attitude questions were also added for the Follow-up exam. Tony coordinated with Jane Doe to administer the Follow-up exam in May. He created a set of instructions entitled “Administrator Notes” for the trainers who were to administer the exam. Nineteen participants completed all three exams. Though the original plan
had been to wait for results from additional classes before writing the final report, a report entitled ‘XYZ Company Follow-up Results’ was published in November of 1998 demonstrating the positive results of the class for the first Batch of participants.

Batch 2: April/May 1998. Batch 2 had two issues which prevented its use in the measurement program. First, because of scheduling conflicts, only 9 people managed to take the preview and review exams. Because of this small sample size, it was decided to forego the Follow-up exam and wait for a larger class. Second, during test administration, the Review exam was given in place of the Preview, causing the loss of some demographic data. The results from this class were detailed in a third progress report entitled “Preview-Review Tests Batch 2” published in May 98 to detail the findings in Batch 2.

Batch 3: Aug 6, 11, 1998. The next scheduled class was canceled, thereby taking away another opportunity to gather data. Then, the training manager who had been overseeing the project at XYZ, Jane Doc went on maternity leave during this time period and shortly thereafter quit her position with the XYZ’s yarn mill to join XYZ’s neighboring textile mill. Upon administering the Follow-up exam to Batch 3 in February 1999, the training employees now in charge inadvertently gave the exam to Batch 4 instead. This was not discovered in time to re-administer the exam to Batch 3, thereby loosing a second opportunity to gather data. In the meantime, XYZ Company changed ownership and names. The new company is called National Textiles.

Batch 4: Dec 1, 10, 1998. The preview and review exams were conducted on schedule. As mentioned above, the Follow-up was conducted earlier than planned on March 31, 1999. A total of nine participants managed to take all three exams. Including the participants from Batch 1, twenty-eight participants took all three exams. Exam results are listed in Appendix I.

Management Interviews: October 26, 1999. Based on feedback from participants on how they had used the classroom material on the job, Tony Ingle created a series of interview questions for senior plant management. The goal was to both confirm what class participants had reported and to gain more insight on the management’s perspective on how the training had impacted the company as a whole. Ingle also prepared a packet for each person describing the results of the class as measured by exam scores and written comments. He then conducted a series of interviews with senior and line managers revealing a variety of positive conclusions about the impact of the class. These results will be forthcoming after all interviews have been thoroughly analyzed and confirmed with Plant staff.

Project Completion and Final Issues
The completion of the project involves reconfiguring the quantitative and qualitative data collected above into a format or formats suitable to the project purpose of helping the extension group demonstrate its impact, first to the interested campus groups involved in the finding process. A secondary goal which developed during the project was to potentially create an article suitable for publishing in a relevant textile magazine such as American Textiles International to further publicize the extension efforts and results.

Therefore, the remaining questions to be answered are:
1. In what format will the project data be of most use for on-campus purposes? (written report, PowerPoint presentation, etc.)
2. Is there interest in attempting to have an article published within the textile media?
Appendix I: Exam score summary

Figure 1. Exam Scores: all three exams
- Preview
- Review
- Follow-up

Figure 2. % Retention of Information from Review to Follow-up Exam
(Average Retention = 78.1%)