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## NATURAL RESOURCE EDUCATION: GETTING FOREST PRODUCTS WORKERS INTO THE FLOW

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**ABSTRACT:** The forest products industry employs over 1.4 million people in the U.S.; it ranks among the top ten manufacturing employers in 46 states. Surprisingly, a recent survey of U.S. forest products workers revealed substantial ignorance and misperceptions about forests and forestry issues. Despite this, few educational programs are targeted at this audience. The Oregon Forest Resources Institute has teamed up with Oregon State University's Forestry Media Center to fill this gap with Project FLOW (Forestry Learning Opportunities for Workers).

Phase one of this project, completed in summer 1997, analyzed the current status of forestry educational opportunities for forest workers in Oregon: existing educational activities, opportunities for new programs, and obstacles to implementing new programs. A mail-in survey, sent to human resource officers or chief executives of 590 forest products businesses in Oregon, indicated that it was important for forest workers to have reliable information about forestry topics. However, fewer than half those responding said that their company currently distributes educational materials or provides on-the-job learning opportunities. Principal obstacles cited were lack of time during the workday, lack of staff, and lack of relevant and effective educational materials.

Phase two of this project will use the survey data, as well as information collected from focus groups, site visits and telephone conversations with key stakeholders, to develop and pilot-test learning materials in various formats. We anticipate that materials developed through this project will have wide application throughout the United States – and that better-informed workers are likely to become better individual decision makers and more effective ambassadors for sound forest management.

### INTRODUCTION

Public questionnaires commonly indicate widespread misinformation about natural resources. Surprisingly, many workers in the forest products industry share these misperceptions, even though their work puts them much closer to the subject than the average citizen. For example, 56% of forest products workers estimated the percentage of paper that is recycled in the U.S. to be one-half or less of what it actually is (Bowyer 1995).

The forest products industry employs over 1.4 American workers, placing it among the top ten manufacturing employers in 46 of 50 states (Bowyer 1995). In Oregon, it employs about 52,000 workers (OLMIS 1997). Although many educational materials on forestry topics are available, few seem to be targeted specifically at this audience.

The Oregon Forest Resources Institute (OFRI) is a state agency charged with communicating reliable forestry information to all Oregonians. OFRI recently identified forest products workers as one group who could benefit from their work. Their five-year strategic plan (OFRI 1996) stated that “providing [industry] employees with reliable information will help them better understand the condition and future of Oregon forests, and make them more comfortable communicating about... our forests.”

The College of Forestry at Oregon State University (OSU) is widely regarded by Oregonians as the state's most trustworthy source of forestry information (Hibbitts 1997). About two-thirds of those polled said they placed a “great deal” or a “fair amount” of trust in OSU's forest scientists. No other group, except for state forestry officials, was trusted by more than one-third of those polled.

OFRI asked the Forestry Media Center staff to try to determine the best opportunities for improving natural resource education for forest products workers. Were educational materials aimed at the general public suitable for forest workers, or was there a need for new materials and methods developed specifically for the industry workforce?

We named this project Forestry Learning Opportunities for Workers, FLOW for short. Phase One of the project is a needs and opportunity assessment. Phase Two involves development of new materials, media, and methods, based on the findings developed in the first phase. This paper addresses Phase One, which was recently completed. Phase Two is not yet underway.

## METHODS

We collected data using a variety of methods, including personal interviews, a written survey, telephone interviews, focus groups, and a site visit. This helped to ensure that we heard from a broad spectrum of the forest products community – including CEOs, human resource managers, public affairs and communications officers, plant supervisors, business managers, and line workers – as well as forestry educators from around the state.

### Discussions With Forestry Educators

Before collecting any other data, we asked key OSU forestry extension personnel to describe current information delivery programs that might be appropriate for educational materials aimed at forest products workers. We also gleaned their ideas about potential content areas, and asked for a “reality check” on the goals of Project FLOW.

Two members of the Project FLOW team also attended a meeting of the Western Forestry Communicators (WFC), a group of trainers, educators, and human resource personnel in the forest industry – people who are responsible for disseminating company information to workers and/or the public. The FLOW team members described the project and received feedback about the opportunities and constraints of creating educational materials for forest workers. This gave us a preview of what to expect, and what hurdles we would possibly encounter along the way.

### Industry Survey

To collect additional data on a larger scale, we mailed a written survey to nearly 600 Oregon forest products companies. Our survey targeted people responsible for overseeing or providing information to employees within their company (e.g. human resource managers, communication specialists, and CEOs). A list of approximately 800 forest products companies was generated from a CD-ROM database of Oregon manufacturers (Oregon Economic Development Department 1997).

Standard industrial codes (SIC) were used to group the companies into four categories: 1) pulp and paper mills and paper product companies, 2) logging companies, 3) primary manufacturers (e.g. sawmills, veneer mills), and 4) secondary manufacturers (e.g. furniture and cabinet makers). Companies employing fewer than 10 people were eliminated, with the assumption that educational activities and materials would most likely be aimed at larger audiences. This reduced the number of companies surveyed to 590.

Survey questions addressed six basic concerns: importance attached to forestry education, the types of education currently offered, who it reaches, how information is conveyed, and where and when educational activities occur. To maximize feedback, the survey was designed so that respondents could merely check boxes or provide written responses if desired.

The surveys were mailed in May 1997, accompanied by a cover letter from OFRI, and a self-addressed stamped envelope. A follow-up reminder post card was mailed two weeks later.

### Telephone Interviews

In order to “ground-check” results of the survey, the FLOW team initiated follow-up discussions with 25 respondents – about one-quarter of those who returned the surveys. We contacted respondents from all four sectors of the forest products industry, and from all over the state. We selected respondents who seemed supportive of Project FLOW goals, and those who included additional ideas and feedback on the surveys. Our aim was to ensure the clarity of the original survey questions, probe a bit deeper into the respondents’ answers, get more details about current educational endeavors they were involved in within their companies, and discuss opportunities and constraints of Project FLOW.

### Focus Groups

Three focus groups were organized in Portland, Corvallis, and Roseburg, to engage survey respondents in a face-to-face discussion. All survey respondents who indicated they an interest in attending a focus group were invited to attend.

Seven participants, representing all four categories of forest products companies, attended focus groups in Portland or Roseburg. Survey results and trigger questions from the FLOW team helped frame discussion. Participants shared examples of educational materials or events occurring in their organizations. Lastly, we presented a few scenarios of potential educational materials to gauge participants’ reactions to different media, and to determine what elements or characteristics might be successful.

### Site Visit

The FLOW team attempted to schedule several meetings with workers at representative companies, but due to busy sched-

ules at most facilities, we only managed to make one site visit, to a veneer mill in White City. We set up this event with the assistance of the acquisitions forester, who was particularly interested in our project. Because of the difficulty of assembling mill workers at one place and time (a mill can't be shut down during the work day), our only window of opportunity to visit with workers was during their half-hour lunch break. Notices advertising the event were placed in the workers' paychecks one week prior to our visit. Seven workers attended.

## RESULTS

### FLOW Survey Results

Response rate. Of 590 surveys mailed, 103 (17%) were returned. Considering that we followed conventional guidelines for mail surveys (Business Research Lab 1996), this was a disappointing return. The response rate varied widely by industry sector. Primary processors (sawmills, veneer mills, and paper mills) returned about 24% of their surveys, and logging operators returned about 22%. Returns from secondary processors were much lower, ranging from 13% for companies performing millwork to 5% for the manufactured housing industry.

Question 1: distribution of educational materials. Forty-two percent of the 103 respondents reported that their firm currently distributes educational materials about forests or forest management to its employees. This rate varied by company size. Nine of 14 companies (64%) with at least 1000 employees reported distributing forestry educational materials, while only 11 of 43 companies (26%) with fewer than 50 employees did so.

Question 2: on-the-job learning opportunities. Twenty-three percent of the 103 respondents reported that their firm offers on-the-job opportunities for employees to learn about forests and forest management issues. Again, company size affected these results. Eight of 14 large firms (57%) reported offering such opportunities; only 4 of 43 smaller companies (9%) did so.

Question 3: methods currently being used. For companies answering "yes" to either of the first two questions, the 3 teaching methods most commonly used included newsletters, brochures or fact sheets, and bulletin board postings. Methods least used were audio tapes, classroom presentations, and conferences or workshops.

Question 4: importance of forestry information and discussion skills for workers. Sixty-seven per cent of the 103 respondents reported that it was either "very important" or "somewhat important" for their workers to have reliable information about forestry and controversial forestry topics. Nineteen per cent said that it was "not too important," and 11% said that it was "not at all important." Results varied by sec-

tor. Nine of 10 softwood veneer manufacturers (90%) rated this item as "very" or "somewhat" important. So did 24 of 32 sawmills (75%), 15 of 21 logging operators (71%), and 5 of 9 paper mills and paper products manufacturers (56%). No furniture or cabinet makers rated it as "very important," and only 3 of 10 (30%) rated it as "somewhat important." One cabinet-maker who rated both items as "not too important" went on to say that "I fail to see the purpose of this survey. We use forest products, but we don't do forestry. Everyone who writes on paper uses forestry products."

Question 5: usefulness of existing materials and opportunities. Respondents rated brochures and fact sheets as the most useful formats for providing information about forestry and forest management issues, with a mean score of 2.05 on a 3 point scale. Newsletters were rated a close second (1.99), while posters, field tours and video programs shared third place (1.58). Computer-based learning was rated as least useful (0.81), followed by audio tutorial tapes (0.92).

Question 6: available technologies. Three-fourths of the 103 respondents said that VCRs were available on site for use in employee training. Two-thirds had computers, while one-third had Internet access. Only 3 respondents had satellite dishes.

Question 7: where forestry education takes place. The most common educational venue was safety meetings, cited by 23% of the 103 respondents. Other educational opportunities cited by respondents include: payroll stuffers, handouts, newsletters, and other printed materials (10%); company meetings (4%), general discussions (2%), presentations by lumber suppliers, and "on the job."

Question 8: obstacles to employee education. The biggest potential obstacle to creating and maintaining an effective employee education program was "lack of time during the workday." Seventy of 103 respondents (68%) described this as a "big problem." The next most important obstacle was "lack of staff to organize and implement programs;" 42 respondents (41%) described this as a "big problem." Third was "lack of relevant and effective educational materials," cited by 32 respondents (31%) as a "big problem." Other obstacles not specifically mentioned in the survey but cited by respondents include union contracts, lack of a suitable location, the topic being "not really relevant," "crews spread out" [geographically], and "employees want[ing] to use their spare time for personal needs."

Question 9: usefulness of potential products and activities. Asked about hypothetical educational activities or products that could be developed, respondents rated as most useful prepared newsletter stories, posters and displays, and video-based educational kits. Rated as least useful were computer-based information using the Internet, and self-study materials to be used on employees' own time. One respondent asked for "success stories, [because] the media focuses on the negative." Another stressed that newsletter stories should be "short and

simple.” Yet another rated formal presentations and “train the trainer” events as useful, so long as they took place on the job site.

Question 10: communication skills development. Active listening and critical thinking were rated as the most important communication skills (they received weighted ratings of 3.41 and 3.38, respectively, on a 5 point scale). Facilitating educational events was rated as the least important (weighted rating 2.35). One respondent requested that an additional skill be added – teaching employees how to write letters to representatives. Another wrote that she was not interested in the program. A third respondent, while rating “good communication skills” as most important, took issue with the whole idea of communication skills training: “I wouldn’t allow such a program. These categories are totally ‘off the mark,’ basically irrelevant to my business, & indicate psych[ological] behavior modification & influence.”

Question 11: train-the-trainer. This idea received moderate endorsement from survey respondents, as long as it was convenient. More than a quarter of the respondents (30 out of 103) said that they would be very likely to attend an event designed to help organize or improve an employee education program, if it was held near their location, while 18 said they would not participate. These numbers were nearly reversed for an event held at OSU’s College of Forestry: 13 said they were very likely to attend, while 30 would not participate. Only 6 respondents said they were very likely to view a satellite teleconference, while 36 said they would not participate.

Question 12: pilot testing new materials. Sixty of the 103 respondents (58%) indicated that they would be interested in pilot testing new forestry educational materials if they are developed. Interest among logging contractors was highest, with 17 of the 21 respondents in this category (81%) expressing interest. Nineteen of 32 sawmills (59%) responded positively, as did 4 of 10 softwood veneer plants (40%), and 2 of 10 furniture and cabinet makers (20%). All 4 paper mills were interested, but only 1 of 5 paper products manufacturers expressed interest, for an aggregate response from the paper industry of 56%.

#### Telephone Interview Results

Respondents generally reiterated opinions they had expressed in the written survey. Most information received in this step was anecdotal. Rather than attempt to summarize that information in this paper, we refer interested readers to our project report to OFRI (Hino et al. 1997).

#### Focus Group Results

The seven participants in the two focus groups were generally very supportive of project goals, but were unable to reach consensus about the methods required to reach those goals. Some unanticipated potential benefits from FLOW emerged during

these discussions – improved morale and increased productivity for participating employees. On the other hand, some concern was expressed about companies’ potential return on their investment in Project FLOW, and about how the project would fit in with company goals.

#### Site Visit Results

We briefly introduced Project FLOW to the seven workers present, then asked them what kinds of questions they get asked about forestry, what their current sources of forestry information are, and what types of additional information they would be interested in. It was difficult to confine the discussion to aspects of Project FLOW, as several workers used the meeting as an opportunity to sound off on other issues in the presence of “management.” We did learn that most workers had access to *Evergreen* magazine, although they felt that it took too long to read each issue. *Evergreen* is published monthly by the Oregon non-profit Evergreen foundation, dedicated to restoring public confidence in forestry. It has a circulation of about 100,000.

### DISCUSSION

In analyzing the vast amount of data received through the survey, telephone interviews, focus groups, and site visit, we realized that we had tapped into an incredibly complex issue. To organize our thoughts, and plan for future activities anticipated under phase two of the project, we used the data to answer the following twelve questions.

#### 1. What Is The Current Situation Regarding Forestry Learning Opportunities for Workers?

Forestry education for the forestry workforce is already happening to a limited extent. Efforts are concentrated at larger companies within the primary processing sector (sawmills, veneer mills, paper mills). Methods used vary widely, but are generally passive (e.g. newspapers) rather than active (e.g. field tour), and generally do not involve employee release time. Notable exceptions include a large primary processing corporation that offers field tours on company time, and a secondary manufacturer that has periodic “lunch and learn” sessions in which employees take part in exchange for a free lunch.

A variety of well-made materials are available, although most are tailored to the general public rather than to the forestry workforce. Notable examples include *Evergreen* Magazine, videos from the Temperate Forest Foundation, and a Web site and printed materials from the American Forest and Paper Association. Most respondents were aware of at least some of these; many cited numerous other national, regional, and local providers of information.

Many companies, both large and small, produce company newsletters, and some produce videos and other materials.

While internally-produced materials may include information about forestry issues, their primary intent is usually to convey company-specific news and other information. Few companies have attempted to evaluate the effectiveness of employee education.

## 2. Does The Industry Think This Project Is A Good Idea?

We did not analyze non-response bias in our mail survey. Among the 17% of the industry representatives who responded to our survey, there is general agreement about the value of forest products workers learning more about forestry. Support is strongest among loggers and primary processors, and much weaker among secondary products manufacturers. This presents an interesting challenge: should we target those who seem most interested and may therefore be better informed, or should we target those who seem to feel less connected to the resource and may be more in need of accurate information?

## 3. Who Is The Best Audience To Target?

Our consensus was that we should focus on workers who are willing to invest some of their own time and effort to learn about forestry. We also felt that we should target line workers, because they are likely to have fewer learning opportunities than managers.

## 4. What Are The Incentives For Employees?

Potential rewards for workers to participate in forestry education are mostly intrinsic, intangible, and hard to measure. According to several respondents, one possible outcome for employees would be a more positive valuation of themselves, their company, their industry, and the contributions that each makes to society. Tangible incentives would come mostly from individual employers: recognition (such as positive feedback from supervisor, mention in a newsletter, a badge, a jacket, a lapel pin, a hat, etc.), paid time for taking part in education, or possibly career advancement.

## 5. What Are The Incentives For Employers?

Several potential outcomes, including higher employee morale, increased company loyalty, and greater community support, could contribute to companies' financial performance. However, all of these outcomes are difficult to measure, and a causal linkage with forestry education would be hard to prove.

## 6. What Are The Potential Impacts?

According to Jim Bowyer (1995), the principal benefit of a better-informed forestry workforce is the diffusion of information to the general public, ultimately leading to better decisions about how natural resources are managed. Other potential benefits include the ability to counter negative information in the press, and an improvement in the public's percep-

tion of what some have characterized as a "low-paying, dangerous, dirty business to be in."

## 7. When And Where Is Learning Likely To Occur?

Information overload. Information is already being presented to employees on the job in a variety of settings and using a variety of media, but there is already too much information that must be conveyed - training, safety rules, information on benefits, etc. In most workplaces, there simply is no more time available for learning about forestry issues on the job - it is categorized by managers as "nice to know" rather than "need to know." Competition is fierce, and it is difficult to prove that the costs of downtime or release time for forestry education are justified by any tangible benefits to the company.

Safety meetings. Many companies use these as a vehicle for occasional forestry education. Several respondents warned that this practice could dilute the effectiveness of the meetings' primary purpose (improving workplace safety) and should not be encouraged.

Overtime. Asking employees to put in extra hours for forestry education is probably not feasible. Union contracts may require overtime pay, and most workers want to get home as soon as possible.

Internal newsletters. As discussed earlier, most forestry education is via passive methods such as company newsletters. Some companies report that the effectiveness of these methods is improved with discussions at "tailgate parties" - informal employee meetings.

Break times. Most learning opportunities are likely to take place on employees' time. One promising way to capitalize on this opportunity is the "lunch and learn" where employees are exposed to new information during their lunch break, and the incentive to attend is free food.

Slack times. Some logging workers are faced with seasonal downturns in work, related to winter weather or spring bark slippage. There may be some opportunities to present workers with organized learning activities during these slumps.

Home. Highly motivated employees, probably fewer than 10% of the workforce, might take materials home with them if they are made interesting and attractive, can be easily understood, and require little time to absorb. Participation could be increased if suitable incentives are provided.

## 8. What Are The Advantages And Disadvantages Of Specific Media And Methods?

Newsletters/brochures/fact sheets. Print materials are relatively easy to produce and distribute. When well written, they provide an easy way for employees to get information and to pass it on to friends and family. However, even the best newsletters

will reach only a certain percentage of their intended readership. It takes a lot of skill and money to make educational materials as attractive as the printed advertising and information that people are bombarded with on a daily basis. Many workers will ignore materials that require more than a few minutes' attention. Other obstacles include the need to accommodate varying levels of literacy and education, different learning styles, and even language barriers brought on by an increasingly multicultural workforce.

Posters. A poster can be taken in at a glance, and can convey a simple message in a highly visual way. However, posters were regarded by respondents as being far less interesting than TV, and less effective at promoting critical thought or discussion.

Video. Many people prefer this medium for information as well as entertainment. Video is chiefly useful for changing attitudes rather than conveying a large amount of factual information. The biggest problem with video in this context is providing workplace viewing opportunities. A few highly motivated employees may take videos home for viewing. Other drawbacks include video's relatively high production cost for the amount of information conveyed, and its linear nature.

Web-based information. The World Wide Web is currently enjoying a meteoric rise in popularity. It has the advantage of presenting information as vividly as 4-color glossy print at a far lower cost; it can also be easily updated. However, only a few managers presently have access at work, and most workers will probably never have an opportunity to access the Web while on the job. Growing numbers of workers with Web access at home could easily access a forestry information Web site if they chose to do so – the problem, as with other media, is in competing for limited time and attention against all their other interests. A Web site could reach most workers indirectly, is by providing raw material (e.g. statistics, analysis, and news articles) for company newsletters in a cost-effective manner.Field tours. Experience is the best teacher. Field tours can provide a vivid learning experience for participants, and can be tailored to local issues and interests. But they cost more per participant than most other methods. Most companies seem unwilling to provide release time, so other incentives must be identified for workers who participate.

Classroom instruction. This time-honored setting for learning can provide for a greater degree of interaction and variety than most of the passive methods catalogued here. However, many workers end up in jobs that don't require advanced education precisely because they disdain the classroom. While some workers do continue their education at night school, the reward is usually a degree leading to a better job. Instruction in forestry issues would be unlikely to be popular, unless release time or other incentives were provided.

#### 9. What Are Potential Content Areas?

Many workers have pressing concerns about current forest management practices. Why are some trees left standing after a harvest? Why are some trees left lying on the ground? Is there any good reason to continue clearcutting? Does clearcutting lead to landslides? Do log exports equate to loss of domestic jobs? Why are some fires left to burn? Often these questions relate to specific examples in the workers' neighborhoods. Managers expressed interest in increasing their workers' knowledge of the complete cycle of natural resource production and use: silviculture, harvesting methods, processing, consumption, and recycling.

#### 10. Should Communication Skills Be Part Of FLOW?

The consensus seems to be that although communication skills are important, they would add further complexity to an already difficult project. Some feel that communication skills training on the scale feasible under FLOW is unlikely to have a significant impact. Many respondents expressed unwillingness to communicate with members of the public who are antagonistic to forestry.

#### 11. What Are The Characteristics Of Effective Materials?

Entertaining. This is a "buyer's market." Forestry workers, like everyone else, get their news from newspapers, magazines, and television, and are continually bombarded with a huge amount of sophisticated communication in the form of advertising. Using video as an example, people will compare everything they see on the screen with the fare available on television or at the local video rental house. Straightforward presentation of facts is not likely to attract and retain a wide audience. Each topic needs to be treated creatively, incorporating entertainment with information.

Short and simple. Forestry workers have limited free time. Faced with a large magazine or a long video, most people will put them aside. Respondents to this survey criticized existing materials for being too long or too complex. The best way to simplify material is to rely on visuals (photographs and artwork) more than on text. Graphs can be effective for some people, but may be seen as too complex by others.

Controlled by learner. Most people want interactivity — the ability to control the content, flow, and pace of information. Simple interactivity can be achieved with well-organized print materials. A video program on a tape is not interactive because it is seen by everyone at the same pace and in the same order, but if combined on a CD-ROM with questions and other prompts, or if used in a classroom setting with a skilled instructor, it can become interactive.

## 12. What Are The Major Obstacles To FLOW?

Time. Undoubtedly, as we learned from our respondents, the largest obstacle is lack of time during the workday. Everyone in modern society suffers from information overload. New information will be accepted only if it has a proven value - if it can be tied to some tangible benefit.

Subject complexity. There are thousands of topics that could be addressed. Different topics will be of greater or lesser interest to different audience segments.

Workforce diversity. This makes the "one size fits all" approach unlikely to succeed. A variety of materials, utilizing different media, are needed to reach the entire workforce. Alternatively, it may be best to target only certain segments of this vast audience.

Company buy-in. Many companies will only support and facilitate the distribution of materials that they see as contributing directly to their mission. They want materials to explicitly feature their company and their activities.

## CONCLUSIONS

We presented the findings from Phase One of Project FLOW to the OFRI board in August 1997 (Hino et al. 1997). By November 1997, the OFRI board had asked the Forestry Media Center to go ahead with development of three pilot projects: a video, a Web site, and a set of field tours. We decided to try several different methods, because we feel that different messages and media will work in different situations.

Because FLOW will be a long-term process, we feel that it is important to have some success early on. Initial materials and methods will target line workers in primary processing facilities; future efforts will address harder-to-reach audiences such as loggers and secondary manufacturing workers.

A variety of methods and materials will need to be developed, and the Forestry Media Center will only have a role in some of them. Our logical niche is centered on the development of non-print media, and on the dissemination of messages that stem from scientific research at OSU.

FLOW's chances of success will be increased by enlisting the participation of forestry industry associations. Managers in-

involved in such groups are more likely to support FLOW goals, and have the ability to influence adoption of FLOW materials and methods at their facilities.

We learned a number of valuable lessons from Phase One of FLOW. Some of our preconceptions regarding forestry education for forest workers were affirmed; others were contradicted. We expect to gather more feedback once materials and methods developed during Phase Two are in use; this information will undoubtedly shape and improve future efforts. Project FLOW team members are hopeful that some of our experiences will be of value to other natural resource educators.

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