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COMPREHENSIVE
EQUITY AT **OHIO STATE**

THE OHIO STATE UNIVERSITY

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Mid-Project Research Report

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SUMMARY

The Ohio State ADVANCE Comprehensive Equity at Ohio State (CEOS) Project aims to transform STEM departmental cultures in three participating colleges at Ohio State to increase the numbers of women faculty and faculty of color in these fields. Project participants expect to develop an inclusive and supportive culture that will contribute to the retention and advancement of diverse women faculty in science and engineering disciplines.

This report summarizes all of the relevant data collected and/or analyzed between January 2009 and November 2010 by the CEOS Project Research Team. It begins with a brief introduction to the Transformational Leadership model which provides the conceptual framework for the project. A logic model that translates this conceptual framework into the project activities is summarized next. A discussion of the project activities follows, beginning with a summary of relevant findings from an OSU faculty survey (to be administered again in 2011) that will allow the researchers to gauge changes in levels of STEM faculty satisfaction with their departmental and college cultures. The rest of the report focuses on research findings to date for the three programs undertaken under CEOS auspices: leadership development for deans and chairs, peer mentoring circles for STEM women faculty, and entrepreneurship training for women in STEM. There are no data yet for the action learning teams, which were just getting started in winter 2010/11.

Major findings from the research to date are:
- The faculty survey underscores the perception that women in the STEM fields in the three participating colleges at OSU feel overburdened and undervalued in their units, particularly at the associate level.
- Analysis of deans' and chairs' workshops feedback and interviews indicates that deans and chairs who took part in the workshops consider them to be highly beneficial and that for some the workshops seemed to change how these leaders thought about diversity and excellence in relation to their college and department cultures. A significant number of these leaders reported engaging in best practices aimed at recruiting and retaining more women and faculty of color. At the very least, the workshops kept the idea of a more diverse faculty at the forefront of leaders' concerns and interests. These leaders appeared ready to move into the next phase of the CEOS Project: formation of the action learning teams.
- Analysis of data from the peer mentoring circles for STEM women faculty shows that participants appreciated networking/connecting with women in other departments and colleges; meeting other women in similar career and life stages; receiving valuable advice; and seeing that others have similar problems and questions. Some of the concerns expressed by participants included reinforcement of frustrations and realizations about serious systemic problems; sessions lacking structure; and there not being anyone to whom consensus the group developed on dealing with problems can be communicated.
- Analysis of data from the first phase of the Reach Project indicates that workshop participants began with interest in commercialization of their research, but lacked

knowledge of many aspects of the process and access to potential partners in business and industry. While workshops clarified the process of technology transfer and provided examples of women who made the academia/business/ industry connections, participants continued to report the need for assistance with concrete plans for achieving commercialization of their research. In particular, they identified the need for administrative support (from department chairs and deans) as well as mentors (within and outside academia) and the problem of ever present time constraints.

INTRODUCTION

This report summarizes research from the Ohio State ADVANCE Comprehensive Equity at Ohio State (CEOS) Project. The results are based on research conducted between January 2009 and November 2010 in initially[1] four STEM colleges (Biological Sciences, Mathematical and Physical Sciences, Engineering, and Veterinary Medicine). We begin with a brief introduction to the transformational leadership model that serves as the conceptual framework for this project. Next, the logic model that translates this conceptual framework into the project activities is summarized in tabular form.

The discussion of the project activities begins with a summary of relevant findings from an OSU faculty survey that will help us gauge changes in levels of STEM faculty satisfaction with their departmental and college cultures. The remaining sections of the report focus on research findings to date for the three programs undertaken under CEOS auspices: leadership development for deans and chairs, peer mentoring circles for STEM women faculty, and entrepreneurship training for women in STEM. There are no data to report on the action learning teams, which are just getting underway.

TRANSFORMATIONAL LEADERSHIP MODEL

The CEOS Project aims to transform STEM departmental and college cultures at Ohio State to increase the numbers of women faculty and faculty of color in these fields. We expect to develop an inclusive and supportive culture that will contribute to the retention and advancement of diverse women faculty in science and engineering disciplines.

The Transformational Leadership model guiding our work (Figure 1) connects five important dimensions of institutional transformation. In the context of CEOS objectives, our vision for the university is one that fosters inclusivity and supports faculty achievement and progress. To achieve that vision, it will be necessary for the leadership, deans and department chairs, to evaluate prevailing cultural assumptions and shift them as necessary. The attitudinal changes regarding diversity, inclusivity, and their link to excellence will lead to changes in current practices. These new practices will need to be supported by changes in university policies such that both institutional and individual needs are understood and met.

A key to achieving this vision is an informed and committed leadership that works collaboratively within and across departments and colleges, addressing deep-seated cultural assumptions, creating local change, and collaborating on strategies to achieve comprehensive equity across the entire institution.

Our model includes characteristics of leadership teams themselves, as well as processes those teams undergo and changes they produce in institutional culture. As leaders work together, they will develop a common vision by inclusive thinking. That inclusivity can

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[1] There has been an organizational change in the University since the start of this project and the initial four colleges are now housed in the Natural and Mathematical Sciences (NMS) a division of the College of Arts and Sciences, the College of Engineering, and College of Veterinary Medicine.

only be achieved if teams are challenged to question and shift shared assumptions and to change practices that discourage full participation. The development of an inclusive vision, and changes in underlying cultural assumptions and in daily practices must occur interdependently for successful transformation of departmental and college culture. We have begun work on this transformation by attempting to address all five areas as interconnected dimensions within a holistic leadership plan.

CEOS has sponsored four programs targeting different audiences in the participating colleges: (a) leadership training for *deans and department chairs*; (b) action learning teams consisting of *deans, chairs, faculty and staff*; (c) peer mentoring circles for women *faculty*; and (d) entrepreneurship training for *faculty* women. Each activity attempts to include aspects of structured work, peer networking, and reflective practice.

Figure 1: Transformational Leadership Model

The work with the deans and chairs touches upon all five components of the model depicted in Figure 1. The deans' and chairs' workshops build upon a vision of support and inclusiveness through clarifying existing cultural assumptions and their implications for a diverse faculty and contemplations of the changes and shifts in attitudes necessary to create an inclusive and welcoming environment that focuses on excellence. It is expected that this change in attitudes will come about through a better understanding of individual and collective needs and will lead to changes in current practices and better implementation/development of flexible career policies at the departmental and college levels that will eventually become institutionalized at the University level.

It is expected that the peer mentoring circles with their focus on individual women faculty and "individual needs [being] understood and met" would lead to both greater support for women faculty and the emergence of recommendations for policies and practices that are conducive to an hospitable environment for a diverse faculty.

Similarly, Project Reach's focus on entrepreneurship will lead to greater participation among women faculty in successful transformation of research products into commercial products and the institutionalization of support for such activity within the University through collaboration among the STEM and business colleges and University administration.

The action learning teams will focus on the implementation of the Transformational Leadership model by addressing specific issues and problems related to local department and college cultures, practices, and policies. It is expected that their outcomes will lead to proposed changes that can be replicated in other departments and colleges.

We are working with innovative techniques to facilitate group cohesion, expression, and engagement in all forums, workshops, and materials. World cafes, peer mentoring circles, and action learning teams are all facilitated by experienced coaches and facilitators, often drawing upon the knowledge and skills of the University's human resources department.

The four activities sponsored by CEOS are listed in the Activities column of the logic model (Appendix: Table 1). The remaining columns list the outputs of these activities and the corresponding expected outcomes.

In addition to the activities mentioned in the logic model, CEOS maintains it own website and communicates with various stakeholders within the University through postcards, brochures and reports. Members of the CEOS team have also participated in various conferences and served as members of site visit teams for other ADVANCE projects.

A. FACULTY SURVEY

One of the sources of data regarding departmental and university culture is the Faculty Survey, which consisted of 75 questions regarding various aspects of University life. We will be using the 2007-08 data as the base and will compare that with results from a second implementation of the survey in 2011. We have begun a preliminary analysis of these data with a more thorough analysis to follow when data from both cohorts are available.

The 2007-08 data include responses from 1360 faculty members of whom 289 were in the four CEOS Colleges as designated in 2007-08. The breakdown of the respondents by gender is given in the table below.

	CEOS Colleges		Full Sample	
	Frequency	Percent	Overall	Percent
Female	64	22.1	495	36.4
Male	225	77.9	865	63.6
Total	289	100.0	1360	100.0

For this initial analysis we focused on summary counts of responses to questions related to
- Relationships
- Workload and Stress, and
- Retention.

As a broad generalization based on data from the CEOS colleges, much of the dissatisfaction expressed in this survey was among associate professors, both men and women. There were some notable differences between the sexes in their responses at all three levels—assistant, associate, and full professor.

Relationships

When asked how satisfied they were with the social relationships with their colleagues, 28.8 percent of women and 22 percent of men expressed dissatisfaction. Satisfaction with their professional relationships with peers had a slightly greater gap, with 21.8 percent of women expressing dissatisfaction compared to 14.1 percent of men. Although generally more satisfied than women with their relationships, male faculty were more likely to express dissatisfaction with the competency of their colleagues. Of the men, 11.9 percent were dissatisfied with the competency of their colleagues compared to 7.8 percent of women. Additionally, men were less likely to feel comfortable expressing their opinion at faculty meetings (22.8 percent of women were uncomfortable compared to 28.3 percent) and the exact same percentage (26.8 percent) of both men and women report feeling ignored in their departments.

The largest gender gaps in faculty satisfaction with relationships tend to be reflected in questions regarding networking. Of the female faculty members, 32.1 percent were dissatisfied with the opportunities for collaboration in their departments. In contrast, 19.1 percent of all men were dissatisfied with this. Similarly, 13 percent more women than men reported feeling excluded from the informal network of their department and 14.9 percent more women than men reported that they did not receive adequate mentoring at OSU.

Men and women at OSU report slightly different levels of satisfaction with their peer relationships. Women tend to be less satisfied than men. However, in general the differences are small. The area of greatest difference between the sexes with regards to relationships is networking. This finding reinforces the idea that it is important not only to address formal policies but to also ensure that women in academe receive informal support in mentoring and collaboration efforts.

Stress and Workload

Eighty-two percent of female associate professors reported that their workload is either too heavy or much too heavy. This number is in contrast to the 53 percent of the male associate professors who reported their workload was too heavy or much too heavy. Women faculty members at the associate level were more likely to report serving on formal and ad hoc committees (90.5 percent) than associate male faculty members (80.9 percent).

In response to the statement "I have to work harder than some of my colleagues do to be perceived as a legitimate scholar," 61.1 percent of women associate professors either somewhat or strongly agreed, as opposed to 28.6 percent of the male associate professors. This disparity in perceptions regarding legitimacy raises questions about how their peers view the contributions of the women faculty and whether diversity is indeed considered an asset.

Retention

When asked "If you were to begin your career again, would you (a) still want to come to this institution and (b) still want to be a college professor, nine of 57 (16 percent) women faculty members said they would probably or definitely not want to come to Ohio State and one said she probably or definitely not want to be a college professor. Of the 189 men, 36 (19 percent) said they would probably or definitely not want to come to Ohio State, four said probably, and one said definitely would not want to be college professors. Although the numbers for women faculty are small, there does not appear to be much of a difference between the responses from the men and the women regarding wanting to be at Ohio State or wanting to be college professors.

Summary

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These faculty survey findings quantify the perception that women in the STEM fields at OSU feel overburdened and undervalued in their units, particularly at the associate level. The results support the need for the type of programming that CEOS offers. In order to bring attention to these issues, our workshops for deans and chairs have featured these data and focused upon recognizing and addressing subconscious biases. In particular, several workshops have included discussion about workloads for female faculty. Additionally, the disparate data about networks for women faculty inform our continued efforts to provide peer mentoring and networking. These data are also expected to help shape the efforts of our newly formed Action Learning Teams.

B. LEADERSHIP DEVELOPMENT FOR DEANS AND CHAIRS

The deans and department chairs of our participating colleges formed a cohort that met quarterly since January 2009 to learn about and reflect on leadership issues. Participants took a Leadership Inventory and subsequently engaged in workshops that focused on a variety of topics related to transforming STEM department cultures. Throughout, these workshops stressed 1) recognizing and addressing underlying cultural assumptions that pose barriers for women in STEM departments and colleges; 2) inclusive versus exclusive practices to help leaders understand the impact of different behaviors, emphasizing gender, ethnicity, and ability status; and 3) the importance of faculty mentoring throughout a long career, to prevent post-tenure burnout, recognize and redirect frustration, and engineer equitable workloads and reward structures. Transformative leadership skills and practices formed the core of this phase of the project, providing a necessary background for deans and department chairs to become ready for the Action Learning Teams which are being formed this fall.

1. Leadership Inventory
The Leadership Inventory used by CEOS is adapted from the Multifactor Leadership Questionnaire (MLQ) created by Bass and Avolio and copyrighted in 1995. We have obtained permission from the creators to use this instrument so long as it is not used in its entirety. Although we have chosen to use only those sections most relevant to our research questions concerning the leadership styles and abilities of our deans and chairs, the tool has been extensively validated by the creators.

The initial responses to the Leadership Inventory indicate that many people already think about leadership and diversity issues positively. In all instances where a response of five is desired, the mean is above four (For all questions 1=not at all, 2=rarely, 3=sometime, 4=frequently, 5=almost always). In all instances where a response of one is most desired the mean is below 3. However, numbers eleven (I think equity is second in importance to academic excellence) and sixteen (I have difficulty getting faculty committed to the vision of the future) are very close to three (2.8 and 2.9 respectively), which indicates potential areas for improvement.

Although these baseline data indicate little potential for overall improvement (i.e., we are not likely to see a statistically significant change in means), some individual

improvements may be measurable over the course of the project. For instance, the range of responses to many of the questions may be reduced through appropriate intervention. Alternatively, the standard deviations for some of the questions may be reduced. For example, questions thirteen (I discourage faculty from acting as 'team players'), seventeen (I recognize that excellence can take more than one form), and twenty-six (I respond to charges of bias and discrimination) especially have room for reduction in standard deviation.

2. Workshops for Deans and Chairs

Winter 2009 (February 27): Leadership, Gender Equity and Academic Excellence
Participation broken down by Colleges: 37% Mathematical and Physical Sciences, 33% Engineering, 16% Biological Sciences, and 12% Veterinary Medicine.

This first workshop provided orientation to Project CEOS for the deans and chairs. Its objectives included obtaining informed consent from participants, opening a dialogue about leadership and the relationship between academic excellence and gender equity, and gathering developmental needs of the group. The participants also completed the Leadership Inventory.

From this workshop, table notes were taken to document how deans and chairs understood the above issues. When asked "What type of leader is being called for today to lead our academic departments?" the major themes included demonstrating innovation/risk taking, supporting academic excellence, transparent decision making, and understanding of budget and fiscal concerns.

When asked "How are gender equity and academic excellence in the STEM fields related?" themes recorded from participants included importance of women in the STEM fields to mentor students, gender equity as necessary for excellence in the STEM fields, and women in STEM fields often constrained by added service.

Finally, when asked "What becomes possible if we excel at recruiting and retaining diverse faculty in STEM fields?" the majority of the responses discussed the pipeline concern and need to have diverse faculty in order to encourage a more diverse student population to engage in the STEM disciplines. Other themes included diversity as an important contribution to problem solving within academia.

There were 22 respondents who provided feedback on the workshop. 81% of respondents noted being satisfied with the workshop and 13% reported being very satisfied and 1 respondent reported being neutral. Additionally, 23% reported that the workshop was very important compared to 59% which reported that the workshop was important and 18% of respondents who were neutral.

In the qualitative portion of the feedback form, participants were asked "What did you gain by participating in this session?" Many respondents reported they enjoyed meeting leaders from other colleges, hearing new viewpoints and networking opportunities.

Regarding "things to do differently" following the workshop, participants noted that they would be more aware of diversity in their hiring and promotion processes. However, some respondents replied with more reluctance, responding, "Not Necessarily," "Perhaps," and "Not Really. Most of this was already on our radar." Finally, when asked about skills, tools, or resources needed to excel as a leader; there was a wide variety of responses, including patience, ability to take risks, more forums for discussion/exchange, and increased resources.

Spring 2009 (May 5): Gender Equity and Culture Issues Impacting STEM
Participation broken down by Colleges: 32% Mathematical and Physical Sciences, 40% Engineering, 16% Biological Sciences, and 12% Veterinary Medicine.
PI Joan Herbers provided and overview of gender and STEM equity issues at the national level and Julie Carpenter-Hubin discussed cultural issues at Ohio State. Subsequently, the participants in small groups discussed their departmental culture issues and their impact on women faculty.

There were 15 respondents who provided feedback on the workshop. 53% of respondents noted being satisfied with the workshop and 47% reported being very satisfied. Additionally, 53% reported that the workshop was very important compared to 47%, which reported that the workshop was important.

In the qualitative portion of the feedback form, participants were asked, "What did you gain by participating in this session?" Many respondents indicated receiving "more facts" and "data" that back up the qualitative information on diversity in the STEM fields. Also, many participants noted increased insight and understanding was gained from the workshop, as well. Regarding "things to do differently" following the workshop, some respondents were ambivalent, either stating, "don't know yet", "None really", or "not at present." Other respondents were focused on changing their negotiation and communication practices. Finally, when asked about skills, tools, or resources needed to excel as a leader; many participants wanted further information and analysis of the OSU culture survey as well as comparisons to other national state universities.

Pre-Autumn 2009 (September 16): Leading Change in the Academy
Participation broken down by Colleges: 46% Natural and Mathematical Sciences, 32% Engineering, 22% Veterinary Medicine.

This workshop featured Dr. Anne Massaro of the Project CEOS team and Office of Human Resources. It focused on tools and methods for initiating change in departments. For example, participants were provided with information about engaging stakeholders and how to hold focused conversations.

There were 20 respondents who provided feedback. Of these respondents, 60% reported being very satisfied with the workshop, 35% were satisfied, and 5% were neutral. In terms of importance of the workshop, 45% of respondents felt the workshop was very important, 50% found it to be important and 5% were neutral.

In the qualitative portion of the evaluation, participants indicated they gained valuable skills and strategies for initiating change in their units. However, participants also emphasized the importance of their new awareness and clarity of the challenges. Many participants noted that they would implement change in their units, taking into account workshop materials. Some specific activities mentioned were communication between and within units and the importance of action learning. Participants noted that they need more time and building relationship/communication skills to be successful in leading change.

Fall 2009 (October 8): Do Babies Matter?
Need attendance information for this workshop!

This workshop featured Dr. Mary Ann Mason of UC Berkeley. In a workshop with only CEOS deans and chairs, she discussed her early work on the disparate impact of family on women in STEM. She highlighted policies that have been implemented at Berkeley to combat this problem and focused in particular, on how to encourage both sexes to make use of the policies in order to reduce the stigma associated with them. She then discussed much of the material that she was presenting on later in the day to the entire campus. At that second presentation, she discussed issues related to the retention of diverse graduate student populations engaged in STEM.

There were 9 respondents who provided feedback. Of the respondents, 55% reported being Satisfied with the workshop and 45% were Very Satisfied. Similarly, 55% of respondents felt that the workshop was Very Important, 45% found it to be Important.

In the qualitative portion of the evaluation, participants indicated they gained a better understanding of the current pipeline challenges for both graduate students and post-doctoral students of diverse backgrounds. Additionally, participants noted they learned about comparative administrative policies and implementation at other institutions, mainly Berkley. Respondents indicated that they would look into a venue for post-docs as a result, as well as improve family-friendly support for faculty members. Finally, more than half of the respondents did not answer the final question regarding skills or tools needed.

Winter 2010 (January 27): Strategies and Tactics for Recruiting to Increase Diversity and Excellence (STRIDE)
Participation broken down by Colleges: 24% Mathematical and Physical Sciences, 40% Engineering, 20% Biological Sciences, 16% Veterinary Medicine.

This workshop featured Dr. Wayne Jones of University of Michigan's STRIDE Committee. Information and advice was given from STRIDE for producing diverse candidate pools and hiring the most desired candidates.

In the qualitative portion of the evaluation, participants indicated they gained

a better understanding of challenging biases and schemas, particularly in the recruitment and interviewing. Respondents also noted that they gained specific facts and data to "back up" diversity as a best practice. Respondents had various specific strategies they listed would change because of the workshop, but most of them revolved around the functioning and structure of committees. When asked what skills or tools were still necessary respondents noted support from higher-level administrators (President's and Provost's office) and funding/support for dual career hires.

Spring 2010 (May 6): Leveraging Diversity
Participation broken down by Colleges: 47% Natural and Mathematical Sciences, 42% Engineering, 11% Veterinary Medicine.

Scott Page of University of Michigan discussed recent research on issues related to diversity in organizations. In particular, he showed how groups that display a range of perspectives outperform groups of like-minded experts when addressing intractable problems.

Of the 19 respondents who provided feedback, 53% reported being Very Satisfied with the workshop and 47% were Satisfied. Of these respondents, 68% felt that the workshop was Very Important, 31% found it to be important and 1% were neutral.

In the qualitative portion of the evaluation, participants indicated they found the information presented to be new ("new vision", "new viewpoints", "new way of looking at things"). Respondents also reported they gained a quantitative platform to support the use of diversity in organizational policies. When asked if anything would be done differently in their unit, given the information in the workshop, many respondents emphasized they would include diversity as a criterion for decision making groups (committees/workgroups).

Summer 2010 (July 29): World Café with External Advisory Committee
See World Café Harvest written by Dr. Hazel Morrow-Jones and Host Team for information on this event.

Fall 2010 (October 21): Gender Equity and Culture Change – Has CEOS Made a Difference?
Participation broken down by Colleges: 46% Natural and Mathematical Sciences, 46% Engineering, 8% Veterinary Medicine.
This workshop offered an update on the programs and research findings of CEOS. Best practices were shared related to mentoring, a healthy department culture, and entrepreneurial training.

Of the 7 respondents who provided feedback, 57% reported being Satisfied with the workshop and 43% were Very Satisfied. Of these respondents, 71% felt that the workshop was Important and 29% found the workshop to be

Very Important.

In the qualitative portion of the evaluation, participants reported they gained insights into how other units operationalize best practices for mentoring and transparency, in particular. Many of the respondents also shared they would be changing the way associate professors are treated in their units. Some participants also reported they would be changing the decision making process in their unit. Finally, the answers varied widely when participants were asked about what resources were needed to be successful in their leadership roles. Some responses included: coaching, teaching self promotion, encouraging networking and transparent communications.

3. Deans' and Chairs' Interviews

The CEOS research team conducted interviews with ten deans/associate deans and sixteen department chairs. Sixty percent of all deans and chairs in the participating colleges were interviewed. The interviewees were asked about the leadership and diversity training experience they have had in addition to the CEOS workshops; best practices for attracting and recruiting candidates for academic positions and specifically diversity hires (women and faculty of color); best practices for promoting faculty; and best practices for retention of diverse faculty. The interviews also explored deans' and chairs' views regarding faculty excellence, enhancing diversity, and implementation in their colleges and departments of university policies designed to enhance faculty satisfaction. The interviewees were also asked to reflect on the effect that the CEOS workshops have had on their thinking and practices regarding recruitment and retention of a diverse faculty.

The interviews were either audio-taped or recorded in note form and entered into NVIVO 8 program. A coding scheme was developed by the CEOS research team using a priori codes (categories based on interview questions) and in situ codes (categories based on information that emerged from the interviews). The data were subsequently coded and code reports used to conduct the analysis and to compile the findings.

These interviews were conducted during the spring and summer quarters in 2010, which is approximately two years since the start of the project.

<u>Training Experience</u>
The interviews began by asking the academic leaders to identify different types of training they have participated in through the university, specifically training for leadership development or diversity. The majority of the interview respondents identified the training they received from the university as related to leadership development. In particular, training pertaining to handling of personnel conflicts, difficult conversations, curriculum management, budget management, hiring, and faculty retention were highlighted. The two main sources of leadership development training reported were the Office of Academic Affairs and the Office of Human Resources at Ohio State. Additionally, a number of the interview participants commented they attended the Senn Delaney unfreezing retreats. Senn Delaney is a culture-shaping firm, which is partnered with The Ohio State University. The Senn Delaney model of change consists of five

elements: diagnosing the current culture and defining the aspirational culture through a set of values; unfreezing patterns of past thinking and behaving; reinforcing new ways of thinking and behaving; applying new ways of operating and thinking to mission critical work; and measuring change in perception of culture and organizational results.

Although few participants noted participating in leadership training pertaining to diversity, specifically, those who did noted they received training to diversity issues in their discipline. In one interview, a participant commented, "we did have an hour long presentation a few years ago in our retreat where someone came in and talked about the issue about women in science and so on. It was sort of like sensitizing the faculty about the little, off-hand comments that are said that kind of build up like rain drops to create a hostile environment. So, sensitizing the faculty to be aware of that, but not much else."

Another interesting outcome in this section of the interview was that a few participants either responded they had received little to no training in these areas or found the training to be unhelpful. One participant noted that they were "just sort of thrown into the deep end of the pool and said, 'sink or swim.'" Another noted, "I've been to a fair number of these things in the past, and I've gotten a little cynical about them. So, particularly the leadership ones where you start out with a MMPI test or something to test your personality, and then you go through a series of canned exercises. The most recent version of this has been the Senn Delaney stuff that is silly, frankly."

Best Practices
Recruiting/hiring
Deans and chairs in all participating colleges indicated that recruitment and hiring of the very best, most qualified faculty members is important to the success of their colleges, departments, and the university. While many acknowledged the importance of wide advertising as an effective recruitment strategy, several indicated that because "everybody is doing that" a more successful approach is targeted recruiting that involves identifying specific persons and contacting them to apply. Targeted recruiting ranges from hearing an impressive speaker at a conference and following up to see if that person would be interested in moving, to using formal and informal networks to identify potential candidates (e.g., learning from a colleague at another university that a current post-doc may be available soon to move into a faculty position), to developing personal relationships with prospective candidates. As an associate dean stated, "The best faculty are those that aren't looking for jobs. The best faculty that we've gotten are typically ones that have been contacted and targeted to apply for the job."

Another strategy that reportedly has worked for some involves being proactive in meeting family and personal needs of prospective candidates. One of the chairs discussed the importance of learning as much as possible about the people who are being brought in for interviews (especially those that have been targeted) so that if the candidate has young children who will need day care or has to move with an elderly parent who requires assistance, the candidate's needs will be attended to during the interview process. The chair explained,

> If day care is an issue…If you can't answer that question on the first visit…you
are
> at a disadvantage of recruiting them…[A] woman we hired…has a young child
and
> [her] major focus was where are the quality day cares…we found out about it and
on
> the first visit we had her visit the day care. It was a very good tactic…the
compassion
> of showing…we care about you as a family [made a] big difference.

Several chairs discussed the significance of sufficient start-up packages to recruit the best faculty. According to some chairs, it is possible to piece together competitive packages by obtaining funds from the college and from the provost's office, as well as graduate student support from the graduate school. As one of the chairs stated, "I tend to be sort of very aggressive, whatever it would take [when] I'd put a package together." Not all chairs have been able to match candidates' start-up requests, as a number have indicated losing candidates to other universities that were able to offer more lucrative start-up packages.

Recruiting/hiring women and faculty of color
The majority of deans and chairs expressed support for attracting and recruiting more women and faculty of color to their colleges and departments. The best practices mentioned included casting "a wide net," targeting potential candidates, providing quality day care for children of women faculty, and enhancing the research environment for women "by remodeling space, giving them more space, being creative in terms of their needs." Several deans and chairs mentioned the inclusion and integration of diversity goals in their search committees and procedures. For example in one college, a Procedural Oversight Designee is appointed for each search committee whose role is to make sure that there is no gender or racial bias in the search process. The dean of another college "meet[s] with every search committee at the outset to charge them and to tell them how important [he] believes diversity is [and to] tell them that the burden of proof is on them to convince [him] they've made a good faith effort to develop a diverse pool." If the dean feels that a committee has not met the standard he has set, he won't approve the short list of candidates to be interviewed.

While partner hiring was mentioned by many deans and chairs as an important strategy for recruiting particularly women faculty, it was not regarded as a "best practice" at Ohio State. The lack of clear policies and a central office that could facilitate partner hires leaves this practice rather arbitrary, dependent on the good will and efforts of individual chairs and departmental faculties.

One chair highlighted the prospective value of pipelining diverse students into the university hiring pool;
> So, we need to start thinking about really creative things. Like, we hear of a
minority

> graduate student somewhere, and that person is good and over time will become very good.
>
> What if as a chair, we said to the university at which this person is studying, we will pay the graduate stipend for that student for two years if he or she will commit to doing a post-doc
>
> at our university and also get paid. But, we would ostensibly have first crack at that minority student."

The chair described this as an example of "creative deployment of resources" and as a potential best practice.

Promotion of faculty from assistant to associate professor
Mentoring of junior faculty, both formal and informal, is viewed by deans and chairs as an invaluable mechanism for these faculty members' acculturation and success. However, mentoring practices vary greatly across colleges and from department to department. Some departments have institutionalized mentoring practices that range from a three person advisory committee for each untenured faculty member, to having one mentor inside and one outside the department, to being assigned one faculty mentor, to holding informal quarterly meetings with the department chair of all junior faculty members. Several chairs also reported that they had informal mentoring going on in their departments which typically involved junior faculty being advised to seek a particular senior faculty member as a mentor or mentoring relationships forming spontaneously.

Several deans and chairs emphasized creating opportunities for research funding and collaborative research for their junior faculty, including visiting with program directors of foundations in Washington, DC, providing extensive information about funding opportunities, and encouraging junior faculty to work on research projects with their more established colleagues within and across disciplines and departments.

Several chairs discussed the importance of having a transparent tenure and promotion system whereby the junior faculty members are given plenty of opportunity to know the P&T criteria, and are provided support and resources all along the way. The mechanisms for achieving transparency range from holding regular professional development seminars, to a standing faculty committee that works with junior faculty, to a thorough annual review meeting with the department chair.

Promotion of faculty from associate to full professor
Many of the deans and chairs acknowledged that faculty members sometimes become stalled at the associate level. Some of the chairs stressed the importance of "mak[ing] sure that they [associate professors] feel like their work is valued and supported." One chair indicated that he looked for leadership opportunities for his associate professors: "not something that would totally take away from the scholarship that they needed to be promotable, but to enhance their portfolio and give them a broader perspective…different ways that they can contribute to the department."
Another chair emphasized obtaining as many awards as possible for associate professors, seeing such recognition also as a way to build a strong reputation for his department.

A number of the respondents discussed alternative definitions of faculty excellence which could aid in promotion of some of the stalled associate professors. One chair stated:

> We were the first department to formally write into our APT (Appointments, Promotion and Tenure) document that there was an alternative path to full professor, and that alternative path has to do with showing excellence…in alternative scholarly areas and that can mean teaching,…text book writing… service, but the criterion is still excellence.

Several chairs mentioned that new university policies regarding promotion may provide more opportunities to change ranks from associate to full professor.

Still others focused on more equitable distribution of resources so that associate professors are not left behind, such as making sure that their salaries do not become compressed or that these faculty members are eligible for course release or Special Research Assignments (SRAs) so that they can maintain an active research agenda.

Best practices for faculty retention
Most of the deans and chairs agreed that a supportive and respectful work environment that recognizes faculty contributions is essential for successful retention of faculty. Some of their comments included: "Maintaining a very collegial atmosphere and ensuring that people are recognized for the things they do, makes us all proud of being colleagues." "Building a support system around the, like the mentoring committees, and demonstrating respect."
Acknowledging them for their contributions, both privately and publicly, like hand-written notes when they achieve something no matter how big or small, goes a long way."

Several chairs indicated that being proactive rather than waiting until faculty members get job offers from other universities, often works to retain their best faculty. One respondent stated:
"We've had case where we make it clear to the person that we will do everything we can to retain them…at the very least that means matching whatever salary offer they got." Another said, "We do preemptive offers…we don't wait until they get an offer somewhere else. If we see someone that's in a position where we know they're desirable and we know [others] are going to come after them,…we will give them additional money."

Other practices mentioned included establishing mechanisms for collaborations inside and outside the department and providing leadership opportunities for those who are interested. While partner hires were mentioned by many of the chairs as an important strategy for retaining faculty, only two of the respondents had successful examples of finding positions for partners of faculty members they wanted to retain. Several mentioned cases of faculty members who left their departments because no partner accommodation was provided.

Best practices for promoting diversity hires
When asked about practices used for promoting women and historically underrepresented faculty, many deans and chairs were unable to articulate a clear or formal policy or process used. Policies which were mentioned seemed to replicate or mirror those policies used for non-diversity hires. A few interview participants commented that there did not need to be a "special" or "different" formula for the promotion of diversity hires.

Views of Faculty Excellence
Throughout the interview process, deans and chairs made references to their conceptions of faculty excellence. The majority of faculty who were interviewed reported diversity as an important aspect to faculty excellence. One participant stated, "There can be the best in a diverse pool", signifying that excellence includes diversity in the hiring process. Another interviewee discussed the excellence of cultural diversity and diversity of thought, "we were looking for intellectual diversity, striving for candidates who are not simply identified as minorities but who come from distinct cultural and educational backgrounds."

However, at times, many of the leaders who were interviewed would comment that standards of faculty excellence would be lowered in order to accommodate diversity. While discussing the importance of diversity to faculty excellence, one interviewee reinforced rigid gender roles and stereotypes, stating "I finally heard a logical answer, and that is that women don't want my job. You know, my job is a 24/7 research oriented job." Another interviewee indicated similar stereotypical thinking, saying "You know that women don't want to be working in a smelly lab." When asked how the environment of the department or college would change if more women faculty were present, one respondent reported, "I think it would be good to have more women because of maybe the role that they can play in mentoring our undergraduate women." Though this final comment is a more positive stereotyping of gender diversity as contributing to faculty excellence, it reinforces particular roles that women are expected to perform within their departments and colleges. These comments indicate that Project CEOS must continue to provide programming that deconstructs these gendered assumptions and supports diversity as vital to faculty excellence.

Enhancing Diversity
Deans and chairs participating in the interviews noted that hiring diverse faculty members was the most common practice used in order to enhance diversity within their departments and colleges. Many of those participating in the interviews discussed the importance of hiring diverse faculty members leading to increased diversity in the student body of the participating colleges and departments. Therefore, both the student and faculty populations were considered important when taking into account enhanced diversity.

Funding was reported to be one of the biggest challenges with respect to hiring diverse candidates who may have several offers from other competing institutions. One interview participant noted, "we made million dollar offers with money we really didn't

have and so the provost puts up a little, the college puts up, the department is supposed to put up. I think one of the biggest issues is resources with respect to diversity."

Implementation of University Policies
During the interviews, respondents were asked to discuss some of the formal and informal mechanisms used within their colleges and departments to create an environment to support faculty success. An overall theme in this area of the interview is that the policies are differentially implemented in the participating colleges and departments. Therefore, there seems to be a lack of consistency in practices leading to faculty success. Below are some of the themes underlying these mechanisms and policies:

As mentioned in the section on best practices for promotion, mentoring is a valuable tool used in most departments and colleges. However, the degree of formality varied greatly in reports from deans and chairs. Most respondents discussed formally assigning mentors for new hires, but that this mentorship was not formally monitored and there were not any official mentoring programs. However, few respondents had formalized mentoring programs with clearly articulated expectations and goals.

In regards to faculty workload, most colleges and departments reported adjusting the workload of incoming faculty members to decrease their course load so more time could be spent on research. Additionally, most interviewees discussed assigning GRAs to new hires to assist in lab settings.

Many respondents reported having challenges implementing dual career accommodation, particularly because other departments may not be able to take on a spousal hire or the college will not have adequate funding in order to hire both partners. In some cases, interviewees were not clear on if there was a formal university policy for spousal hires, "We do try spousal, you know, there was at a time in the university the spousal hiring thing. I don't know that we have that opportunity anymore. I don't believe we have a specific program for that."

The majority of respondents reported that use of stopping the tenure clock is widely used and supported within the departments and colleges. Many interviewees reported that this is formally and informally encouraged to all faculty, both men and women. Very few respondents reported use of the part-time to tenure procedure; one did report using it with a female faculty member who was having health problems within her family.

Another aspect of career flexibility was discussed in this section of the interviews, particularly taking sabbaticals. Interviewees from the College of Veterinary Medicine described having "fewer options" to take sabbaticals, due to the strain of teaching, service, research and clinical expectations. According to one participant,

> "If you looked over the past 30 years at the number of sabbaticals taken and compared it to any other department in the university, well not any other department, if you compared it across the board, you'd find fewer sabbaticals. And whose fault is that? And I don't believe, I do not believe it's the

administration's fault. There's a culture in our department, that people just don't take sabbaticals. "I'm, I can't afford to take a sabbatical. I'm too busy. I've got clinical responsibilities. I've got teaching responsibilities. I don't have time for this." The sabbatical is a way for a faculty member at the associate professor level or at the full professor level to re-tool, to learn something different, to bring something back and do something different. And we've had people do sabbaticals. We have, but that has not been used enough."

Though most respondents stated that they informally encourage cross department and college collaboration, very few reported having formal mechanisms to support collaboration. In one instance, a respondent reported getting a sub-contract allowance from the college for a collaborative project with another scholar at another institution.

Impact of Project CEOS

In the final group of questions, respondents were asked to speak to what type of impact, if any, Project CEOS workshops had on their leadership, particularly any use of practices discussed, change in leadership style, or use of new vocabulary. Although a majority of participants did not indicate a specific practice or policy change as a result of these workshops, many reported a greater awareness of diversity as an aspect of excellence. The workshops helped them to keep issues of diversity on the "front burner" in decision making processes.

In a few instances, interviewees cited small scale changes made to implementation of policies, such as annual review processes and search committee procedures. One respondent recalled that while having a woman chairing a search committee, this respondent requested, "no, put your name in because I heard that women are more apt to apply if they saw that a woman is in charge of the search committee." Though the interviewee referred to this change as "subtle," this person reported undertaking the process differently because of CEOS programming.

Another theme in responses to the effect of CEOS programming on their positions was the "hard science" and statistical data presented supporting the notion of diverse backgrounds and viewpoints as a criterion for excellence. One respondent stated, "I like the fact that they're giving a scientific perspective on diversity."

A final theme that interviewees discussed was the benefit of support for faculty members through involvement in Project CEOS programming and services, such as Project REACH, Peer Mentoring Circles as well as OSU:pro entry.

<u>Implications for Action Learning Teams</u>
The above analysis indicates that deans and chairs who took part in the workshops considered them to be highly beneficial and that for some the workshops seemed to change how these leaders thought about diversity and excellence in relation to their college and department cultures. A number of these leaders report engaging in best practices that are aimed at recruiting and retaining more women and faculty of color. At

the very least, the workshops kept the idea of a more diverse faculty at the forefront of leaders' concerns and interests. These leaders thus appear ready to move into the next phase of the CEOS Project: the formation of action learning teams that will identify the pressing problems/issues related to local (college and department) cultures they want to address, set specific goals for their projects, and develop and implement action plans.

C. PEER MENTORING CIRCLES

Peer mentoring circles for tenured STEM women faculty were established as part of an initiative to offer women leaders opportunities for solving problems and building community.

In invitations to participate, the purposes of the peer mentoring circles were stated as:

- Offer a safe, confidential forum for dialogue, reflection, and the exchange of ideas,
- Encourage career and life goals, and
- Support participants in taking focused and purposeful action in responding to the challenges they face.

Originally, twelve to fifteen women composed a circle with each circle having a mix of women from the three colleges of Biological, Mathematical and Physical Sciences (BMAPS), Engineering, and Veterinary Medicine, and a mix of Associate and Full Professors.   Three circles have met monthly, each for a two-hour period. The circles are facilitated by a consultant from outside The Ohio State University. They rely on a loosely structured approach with participants largely setting the agenda. The facilitator has been primarily engaged to encourage a focus on personal growth through group support, inquiry, and mentoring.

Feedback from the participants has resulted in a change in structure. Starting in October 2010, the facilitator now provides more structure to the circles. Rather than the circles being primarily member directed, the facilitator prepares materials on topics previously identified in circle discussions and presents strategies for addressing them. Member discussion and personal experiences are used to highlight examples and encourage meaningful discussion of the topic. In addition, the three circles have now been consolidated into two with each meeting once per month. Whereas early circles had assigned membership, participants now are not assigned to any of the particular circles but are expected to attend one of the two meetings each month. Since both meetings in a given month will be on the same topic, this is believed to have eased the scheduling constraint felt by some participants while ensuring that all members receive the same level of support regardless of which circle they attend.

1. Participation

In Spring 2009, all ninety tenured women faculty in the three Colleges of BMAPS, Engineering and Veterinary Medicine were invited to participate in a circle. Thirty-nine women expressed interest in participating and did participate in at least one circle meeting in Summer 2009. Thirty-two of the thirty-nine continued to participate in Fall

09. An additional 10 women were recruited, increasing the number of Fall 2009 participants to forty-two. By the end of Spring 2010, thirty-one women remained active participants.

In late Fall 2009 the reasons why women had dropped out of the circles were investigated. In all cases except two, the reasons involved pressing family challenges or scheduling conflicts. In the remaining two cases, a Full Professor said she had benefitted from mentoring in the past, and that peer mentoring was no longer relevant to her. In the second case, an Associate Professor said the circles were too "woo-woo" for her.

2. Questionnaires

At the end of Fall 2009, participants were asked to complete a ten-item questionnaire; 64 percent of participants responded. At the end of Spring 2010, participants were asked to complete a sixteen-item questionnaire; 48 percent of participants responded.

From the two questionnaires, three repeated items reflect the increasing value of the circles:

Item	Dec. 2009	June 2010
	% Agree/Strongly Agree	
I am personally benefitting from participating in a circle.	78%	100%
I am professionally benefitting from participating in a circle.	50%	60%
Participating in a circle is a valuable use of my time.	75%	80%

In the open ended responses it is clear that respondents' expectations shifted over time. In the first administration of the questionnaire responses to "My experience in the circle can be strengthened by…", a majority of participants focused on personal changes (e.g. "Trying to find a time when I can attend") or on the participation of others (e.g. "More constructive thinking by some participants"). In contrast, the second survey responses articulated a clear desire for more structure and facilitator involvement. This desire was reinforced in participants' discussions with our External Advisory Committee in July and has led us to alter the structure of the circles.

3. Essays

At the end of Spring 2010, participants were asked to submit a reflective essay, answering the question, what have you gained personally and professionally from the Peer Mentoring Circles? To date, eight (25 percent) reflective essays have been received. The following themes have thus far been identified:

Circle benefits and concerns
Among the benefits perceived as a result of taking part in the circles the participants mentioned: networking/connecting with women in other departments/colleges (3); meeting other women in similar career and life stages (3); hearing from Department Chairs (2); receiving valuable advice; seeing that others have similar

problems/issues/questions (2); gaining perspective on the situations that others have encountered (2) and gaining social experience/opportunity (2).

Some of the concerns expressed by participants were: In the first session participants were encouraged to reveal personal and emotionally unsettling/troubling experiences/too intimate for an initial conversation (2); attendance (2); lack of commitment from members; domination within a circle by 1-2 members; circle reinforced frustrations and realizations about serious systemic problems; sessions lack structure; and no one to whom consensus the group develops on dealing with problems can be communicated (e.g., women feeling overworked/burned out).

The facilitator was perceived to have a great fund of knowledge, valuable experience outside of academia, and was seen as helpful in contributing current "thinking" as well as in her constructive approach to looking at problems and situations. Participants indicated, however, that they would have appreciated more input from facilitator and more topic related discussions.

As indicated above, the participants' feedback was used to restructure the mentoring circles.

D. PROJECT REACH

1. Self Evaluations

Eleven women faculty from a variety of Science, Technology, Engineering, Mathematics, and Medicine (STEMM) fields at Ohio State University participated in the first phase of the Reach Project. They were given a self-assessment questionnaire before they took part in a series of four workshops. The instrument consists of 39 items of self-perception of skills, attitudes, and relationships related to entrepreneurship; respondents are asked to rate themselves on each item using a scale of 1 (inappropriate) to 5 (highly appropriate). With such a small number of participants, the modal (most frequent) response seems to be the best indicator of an aggregate perception of their skills. This tool was created by a consulting company based in the United Kingdom, Transitions. It was validated by the creators Ian Deamer and Louse Earle[2]. Several of the items from this tool were slightly altered to make them specific to the OSU context.

The respondents scored highly (4 or 5) on most of the 39 items. Items with a modal score of 3 were:
19. I have often created through destroying the status quo.
26. I see myself as a facilitator of change.
32. I am described as assertive.
34. I have a wide range of professional contacts outside academia.
37. I am familiar with the Tech Licensing office at OSU.

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[2] Deamer, Ian & Louise Earle. "Searching for entrepreneurship" in *Industrial and Commercial Training.* Vol 36; Issue 3: pp99-103. 2004.

Participants scored the lowest (mode of 1) on item 24 (I have collaborators in industry) and had a modal score of 2 on item 36 (I am familiar with the business world).

The self assessment was administered again via campus mail immediately following the last workshop. We received back 7 of the eleven surveys (63.6%). There was little statistically significant change between pre and post administrations. However, some changes of note were identified.

On all but one (#34) of the questions with initial modal responses of 3 saw some consistent measure of improvement. Although questions 19 and 37 did not have a change in mode, both saw an increase in average response rating and a decrease in standard deviation. This suggests that those who had previously responded lower than the mode saw improvement through attendance at the workshops. Additionally, questions 26 and 32 had a mode of 4 post intervention as well as having improved averages and decreased standard deviations.

Items 24 and 36 also showed positive gains. Although mode did not change for item 24, the average increased, the standard deviation decreased and the median increased. Item 36 had the largest changes of any question. The mean response rating increased by almost an entire point (.779 change), the standard deviation decreased and both the median and mode increased to 3. This improvement demonstrates that thus far our programming can be, at the least, to be improving knowledge about business practices among our women faculty.

Furthermore, one of the workshops focused on "soft" skills of entrepreneurship including handling rejection. One of the questions dealing with this issue (3. I am motivated by a need to avoid failure) showed marked improvement. The mode decreased by 3. Another question related to this (8. I am resilient—responding positively to rejection) did not see a mode change but did have an increased median and mean and a decreased standard deviation. It appears that participants did retain this necessary soft skill from the second workshop.

2. Workshop Feedback

Workshop #1
This workshop featured a panel of successful women scientists and entrepreneurs currently employed at OSU who have taken various routes to commercialize their research findings.

Fifty percent of participants reported being very satisfied with the workshop, 40% were satisfied, and 10% were neutral. Sixty percent of participants found the workshop to be important, 20% very important, 10% were neutral, and 10% found it unimportant.

In the qualitative portion of the evaluation, participants indicated that they gained valuable information about technology transfer changes at Ohio State. They also reported

a raised consciousness of other women in similar positions to their own, and were encouraged by success stories told by the women panelists.

The participants also reported various needs, in terms of skills, tools and resources, related to potential commercialization efforts. Fifty percent mentioned the importance of having a "roadmap" or "path," in other words, a clear plan or guidelines for commercializing their research results. Another 50% mentioned the need for assistance in the form of a mentor or guide to help them through the process.

Workshop #2
This workshop focused on the so-called "soft skills" or people skills needed to become successful in entrepreneurial activities.

Sixty-seven percent of participants reported being satisfied with the workshop, 11% were very satisfied, and 22% were neutral. Fifty-six percent found the workshop to be important, 11% found it to be very important, and 33% were neutral. While the majority of participants continued to find the workshops important and were satisfied, this workshop showed lower rates of both satisfaction and importance than any of the other workshops.

The participants reported a gained awareness of challenges or barriers for women in entrepreneurship and the commercialization process. However, several seemed impatient with the workshop's focus on obstacles and would have preferred to move beyond them. Participants indicated very similar needs for skills and resources to those in the first workshop evaluation: roadmaps, support for their efforts (including administrative support), and networking with potential partners who has entrepreneurial experience.

Workshop #3
This workshop focused on the process and infrastructure in place at Ohio State to help faculty commercialize their intellectual property. The goal was to help participants identify paths to commercialization most promising for their own research applications.

Forty-three percent of participants reported being very satisfied with the workshop, 43% were satisfied, and 14% were neutral. Seventy percent found the workshop to be important and 30% found it to be very important.

Participants reported that they gained a better understanding of timing, scheduling, and planning, and the OSU patent process. Nevertheless, at least half of them were still not sure about the process of moving research from the bench to the market, lacked ideas for promising projects, and wondered how much time the process would take. A telling comment: "There is a grey area with regard to how much work is involved that will detract from my normal research efforts."

Workshop #4
The last workshop featured a panel of women faculty who received industrial funding, attracted venture capital, and started their own businesses.

Only five of the eleven participants attended this workshop. All of them reported being satisfied with three (60%) reporting being very satisfied. All them also found the workshop to be important with the same sixty-forty split between those who found it very important versus those who found it to be important.

Those who attended, indicated that they gained an understanding of funding needed to start a business and could now see "possibilities {for}… commercializing a technology or idea."   However, they still reported a need for sources of support (mentors, administrators] who could help them through the process, and expressed concern about the time it would take to engage in commercialization activities.

Follow Up Feedback on Project REACH
Participants were asked to provide follow up feedback on their experiences in project and also what they would both take away from and change in the programming. Evaluations were submitted to all eleven participants through campus mail, along with the Self Evaluation (post). Of eleven, six participants responded. There will be an effort made to contact the remaining women to increase our return rate.

The feedback questionnaire included questions on expectations and satisfaction, valuable components, critique of programming, comparative ratings of the four workshops, changes in thinking and actions as a result of the programming, needs from academic leadership for commercialization, and the possibility of institutionalizing Project REACH.

1. Did the Project REACH workshop series meet your expectations?
Overall, participants were satisfied with the programming but expressed concerns over knowing what next steps to take and creation of a road map for the commercialization process. Additionally, those participants who were not as satisfied expressed concerns about implementation of the commercialization process without departmental supports. One participant reported that the workshops were already in her scope of knowledge.

2. What were the most valuable components of Project REACH?
Participants valued the insight into the processes at OSU specifically and the shared experiences by women in the commercialization process.

3. What components of Project REACH should be eliminated in the future?
Three responses for this question noted concerns or issues with Workshop #2, the "psycho-social" discussions and processes in the commercialization processes. These responses suggested the workshop be removed, modified, or integrated into another session or shortened. Responses also suggested there be more "follow-through" in the workshops. Suggestions included: one-on-one appointments with the tech office and discussions with the business school as well as presentations with faculty who have small businesses.

4.Workshop ratings:

Respondents were asked to rate the workshops.
Workshop #1- More than half of the respondents rated this workshop as either Excellent or Very Good. (6 responses)
Workshop #2- A fourth of the respondents rated this workshop as Very Good. (4 responses)
Workshop #3 – Half of the respondents rated this workshop as Excellent, while the other half rated it either Good or Fair. (4 responses)
Workshop #4- All of the respondents for this workshop rated it as Excellent. (3 responses)

5. Is there anything you think about differently as a consequence of Project REACH?
Respondents expressed less fear about the process of commercialization, generally, but are still cautious of certain aspects of the process. One respondent reported enjoying the second workshop and that her approach when engaging leadership interactions with men will change. Another respondent noted that she will not be thinking about anything differently after Project REACH.

6. Is there anything you will do, will not do, or plan to do differently, as a consequence of Project REACH?
Three of five respondents reported Not Really, to be determined, or No. The affirmative response reported considering tech transfer when working on research projects.

7. To help and support our faculty succeed in commercialization activities, what suggestions do you have for Deans and Chairs? What should they know about what you need to be successful?
Respondents recommended that patents and other commercialization activities should count during pre and post tenure processes as well as in determining raises. One respondent requested a road-map within the OSU system. One respondent suggested there be a part 2 to Project REACH and stated her concern that there is no incentive for chairs to facilitate the commercialization process.

8. Should components of Project REACH be regular offerings available to faculty at Ohio State?
Five of the six respondents suggested Project REACH be offered regularly. In addition, one respondent suggested workshops 3 and 4 be expanded. One respondent noted that this process has to start with departmental and college leadership and that without that support faculty members are limited in their commercialization process.

3. Summary of findings
This analysis of data from the first phase of the Reach Project indicates that women faculty who participated in the Reach workshops began with interest in commercialization of their research, but lacked the knowledge of many aspects of the process and access to potential partners in business and industry who could help them. While the workshops seemed to clarify for the participants the process of technology transfer and provided real life examples of women who had made the academia/business/ industry connections, participants continued to report the need for assistance with

concrete plans for achieving commercialization of their research. More specifically, they identified the need for administrative support (from department chairs and deans) as well as mentors (within and outside academia) and the problem of ever present time constraints.

Next steps

The workshop participants represented the broad range of departments that make up the STEMM disciplines at Ohio State. Although only eleven professors attended these workshops, they spanned a broad range of experience with commercialization, from novices to those who already had success with taking their research into the marketplace. The self-assessments do indicate a lack of familiarity with the business world and a desire to gain a better understanding of and contacts with business and industry.

Policies and Culture: As the University continues to see greater value in stronger ties among the faculty with business and industry, there will be a need to better articulate the policies and incentives that enhance and promote such contact. Departmental culture will also have to reflect that emphasis on engagement outside the academy particularly as these interactions add value to the faculty members' research and teaching portfolios.

Workshops: As the University places more value on University-industry interaction, there will be greater need for information such as that provided in these four workshops. Institutionalizing these workshops and streamlining the processes within the University administration that provide support for and promote University-industry interactions will be an important and necessary aspect of achieving closer ties between the commercial world and the University.

CONCLUSION

This document represents a descriptive summary and analysis of Project CEOS baseline data to date (December 2010). At this time we are not able to make claims about the specific impact of any of our programs on the participating colleges or departments or on OSU as an institution. We require comparative data, which we are now in the process of collecting, in order to make such conclusions. However, these preliminary findings support and inform our efforts moving forward. This document is likely to be used to inform future workshops and the efforts of our Action Learning Teams. It is intended to be updated as more data are collected and analyzed.

APPENDIX Table 1: Logic Model

Inputs	Outputs	Outcomes		
		Short-Term	**Medium-Term**	**Long-Term**
Workshops for Deans and Chairs	Consent Forms	Awareness of cultural assumptions	Sustained discussion of cultural assumptions	Permanent change in department/college culture
	Toolkits			
	Active Discussion			
	Attendance at quarterly meetings	Skills to effect change	Commitment to alter institutional culture and policy	Changed institutional policy
	Leadership Inventory (Pre and Post)			
Interviews with Deans and Chairs	Interviews Completed	Articulate the benefits and problem areas of the workshops	Receive improved/targeted workshop training in the future	Increase ability to identify and alter institutional policies that are not culturally sensitive
		Think critically about the workshop materials	Continue to discuss workshop material outside of the workshop context	Increase commitment to be continuously aware of cultural assumptions
Action Learning Teams	Deans appoint team	Think critically about the cultural problems of their specific Department		Permanent change in department/college culture
	Portfolios/Action Plans created	Sustained discussion among members of different departments/colleges about cultural issues	Work collaboratively to find and implement methods of addressing cultural issues	Changed institutional policy
	Quarterly meetings held and attended			

APPENDIX: Table 1: Logic Model (continued)

Activities	Outputs	Outcomes		
		Short-Term	Medium-Term	Long-Term
Peer Mentoring Circles	Held Monthly	Opportunity to share concerns and experiences	Increase feelings of support	Retention of women faculty
	Attended regularly	Meet other women in STEM	Increase professional connections	Increase interdisciplinary opportunity
	Consent forms			
	Active discussion	Learn new strategies for handling problems	Apply new strategies for handling problems	Increased success & productivity of women faculty
	Journals			
	Annual Response Essays	Reflect on personal growth, coping and leadership abilities	Feel empowered to take on new roles	More representation of women in leadership roles
	Surveys	Think critically about the benefits and problems of peer mentoring	Adjust the format and/or content of circle discussions	Create a supportive institutional culture with prolific, formal and informal mentoring opportunities
			Take on mentoring roles outside the circle	

Activities	Outputs	Outcomes		
		Short-Term	Medium-Term	Long-Term
Entrepreneurship Workshops Project REACH	Attended regularly	Learn about opportunities for entrepreneurial activity	Increase entrepreneurial activity among women members of the STEM community	Increase entrepreneurial success among women
	Consent forms	Learn skills for successful entrepreneurship	Increase demand for institutional support of entrepreneurial activity	Increase institutional support for entrepreneurship (especially among women)
	Self assessment (pre & post)	Learn how to translate academic success into entrepreneurship and vice versa		Increase institutional and cultural recognition of entrepreneurial success
	Workshop evaluations (4)			
	Exit survey			
	6 month follow up			