**EXECUTIVE SUMMARY**

**INFORMATION ITEM:** Evaluation of the Learner-Centered Education Grant Presentation

**ISSUE:** The Regents will hear a report by Dr. Melvin Hall, who has conducted an evaluation of the first three years of the LCE grant program.

**BACKGROUND**

In 2001, the Regents authorized $500,000 of the TRIF Regents Innovation Fund from Proposition 301 monies for grants to faculty to improve and expand learner-centered education throughout the university system.  The purpose of learner-centered education is to change the dynamics of student-faculty interaction to optimize students' learning and learning outcomes (focusing on what is learned rather than on what is taught), to utilize technology to create opportunities for student learning, to utilize student peer interaction (collaborative learning), and to create more active learning venues for students beyond the standard lecture and discussion method.

Beginning in 2002, 14 to 20 grants have been awarded annually to faculty in the university system in one of these funding ranges:
- Up to $ 24,999:     Individual faculty, course, or program projects.
- Up to $ 49,999:     Multiple departments, university-wide or campus-wide projects.
- Up to $ 100,000:    Multiple university projects.  The highest funding level is awarded only to substantial tri-university initiatives

Projects are 18 months in length and are awarded in one of four primary categories: faculty development, course or program modification, assessment, or research.

The grant program was funded initially for 5 years (2002-2006).
- The grants awarded for 2002, 2003, and 2004 have concluded.
- The 2005 projects will conclude on September 30, 2006.
- The 2006 projects will conclude on September 30, 2007.

During the first four grant cycles (2002, 2003, 2004, and 2005), it is estimated that more than 429 faculty teaching 397 courses to 32,750 students have been directly impacted through 68 funded projects.  Funding began on April 1, 2006, for the 11 projects awarded in 2006.

**DISCUSSION**

An evaluation of the LCE program was planned to be conducted when three years of grants (45-50 grants) had been completed or those projects funded during 2002, 2003, and 2004.  The 2004 grants concluded on June 30, 2005, and the process for selecting a consultant began shortly thereafter.

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The purpose of the evaluation was to determine if the program provided added value to the universities and also to gather evidence for a recommendation regarding continued funding of the program.

The LCE Team delegated the responsibility for selecting the consultant to the LCE Advisory Council. Following a request for proposals in June 2005, Dr. Melvin Hall was selected for the study. Dr. Hall, professor of educational psychology and education leadership at Northern Arizona University and former dean of the NAU College of Education, has professional expertise in program evaluation.

**Key Milestones in Evaluation Process**
- August 2005             Dr. Hall met with LCE Advisory Council and began evaluation process
- October 18, 2005        First progress report by Dr. Hall to LCE Advisory Council
- December 20, 2005       Second progress report to LCE Advisory Council
- February 10, 2006       Final report to LCE Team and LCE Advisory Council
- May 18, 2006            LCE Team approves LCE Advisory Council response to Evaluation Report.

**Next Steps**
The LCE Team and the LCE Advisory Council strongly support the continuation of the Regents grant program. Guided by the information provided in the evaluation, these groups will be developing recommendations regarding future directions for the grant program during the next few months; these recommendations will be presented to the Board for their response and action.

**Attachments**                                                           Page

**RECOMMENDATION**

This presentation is provided for the Board's information.

# Contents

<u>**ATTACHMENT 1**</u>

# Evaluation of the Arizona Board of Regents Learner-Centered Education Initiative

Dr. Melvin E Hall, Consultant
February 3, 2006

# EXECUTIVE SUMMARY

## I.    Learner-Centered Education Grant Program Evaluation Report

The Arizona Board of Regents (ABOR) began discussion of Learner-Centered Education (LCE) in 1999. Although LCE was thought to hold promise for addressing serious issues facing the state, funds for developing an initiative were not immediately available.  Resources from the Regents Innovation Fund provided the impetus to move forward with the development of learner-centered education, as the Regents used the fund to authorize an annual allocation of $500,000 for faculty grants to improve and expand learner-centered education activities throughout the system.  The grant program is overseen by the LCE Team, which provides general oversight, approves funding for grants, and approves substantive changes to the grant process or criteria.  An LCE Grants Advisory Council works with the program director in managing the proposal review process and recommending substantive changes to the LCE Team. The detailed work of proposal review is accomplished by a Grant Review Panel comprised of several university-based proposal review teams.

This evaluation was commissioned to assist in deliberations regarding the future of the LCE Grant Program beyond its initial five year authorization.

In defining the purpose of the evaluation, the LCE Team prioritized two goals:
1.   To determine if the program provides added value to the university system.
2.   To gather evidence for a recommendation to the Regents regarding another 5 years of funding.
The evaluation has been further organized by three questions that provide focus.  These questions are:
1.   Is there evidence that funded projects have increased/improved the infusion of learner-centered education into the universities' educational environment?
2.   How well does the LCE grant program match the priorities for the Regents' innovation fund?
3.   Has the grant program met its intended purposes?

Outcomes of the evaluation can be summarized into the following nine recommendations, with each preceded by a synopsis of the evaluation data leading to the suggested action.

## II.    Recommendations

The process leading to the creation of the LCE Grants Program has been characterized as very open-ended.  For example, the program was launched with expectations of changing instruction in the university system without collection of any baseline data that could assist in determining what has changed since the program began.  Additionally the program began without clearly specified criteria that would signal whether the program was successful.  As a result of these early implementation omissions, there is currently little differentiation between expectations for individual grantee performance outcomes and the expected impact of the overall grant program.  The only published criteria of the program are those used in evaluating individual grant proposals, resulting in a lack of visibility for the composite aims and potential of the overall grant program.  Given these challenges, the scope of this evaluation is limited to gaining further understanding of how the program is viewed across the system and identifying issues for consideration in determining the future of the program.

**Recommendation #1: Develop clear and measurable goals for the grant program.**

**The grant program would benefit from clear and measurable goals.  These goals would assist in defining how the overall program of grants is expected to impact the university system, in contrast with the expected impact of individually funded projects.  These goals would also address the question of how much impact is expected for the level of funding associated with the grant program, and the anticipated nature of this impact on students, faculty, and staff.**

The grant program created a nontraditional link between Regents and faculty, representing a rare opportunity for the two groups to work directly together. This relationship was received with mixed reactions most notably by university provosts because it bypassed traditional budgetary decision processes. Beyond the Provost's concerns, two key issues have been identified. First, the current grant program design makes alignment of awards and university priorities inconsistent at best, limiting the potential for infusion of campus funds even if the project demonstrates promise for sustainability. Second, the pattern of individual awards reward faculty innovation yet failed to ensure collaboration between faculty members working on similar ideas or recognition that similar work was underway. A dynamic tension has been created between options for maximizing the incentive for innovation by rewarding faculty initiative, and maximizing long-term impact by leveraging awards with institutional funds made possible through central campus support or engagement.

As evaluation interviews evolved, discussion of alternative strategies for organizing the grant program began to surface. A central theme of these alternative strategies was some form of blocking grant awards either in larger grants to individual universities that were re-granted to faculty on a competitive basis, or what was described as bundling of grant proposals by each university. Other suggestions focused directly on the issue of better "up front" integration of campus priorities into the funded proposals. While these suggestions came up regularly in interviews the net consensus was that any change from the present system could potentially hurt more than it would help. The general consensus was that the program should seek to create more synergy across each campus and beyond campus boundaries, but be cautious to avoiding damaging important incentives currently in place.

> **Recommendation #2: Utilize campus appointees to grant program committees to increase synergy between grantees on each campus and across campus boundaries.**
>
> > **The grants program currently includes significant campus representation through the participation of Provosts on the LCE Team, Provost appointees to the Advisory Committee and Provost appointees to campus level review teams. The goal of better synergy across each campus and between campuses might begin with attention to ways of enhancing the communication between these campus representatives, campus planning and priority setting activities, and faculty across each campus.**

The preponderance of information collected during this review highlighted very positive experiences of grant recipients. It was common for proposal writers to acknowledge that the ideas behind the proposal had been around for some time prior to the grant program providing the support that made pursuing the ideas possible. Another frequent theme described how the grant funds supported the beginning of an activity that has been sustained with funds from other sources. There were also examples of LCE grant funding that sponsored effective student retention activities.

Those interviewed felt that the present configuration of the program funding levels keeps the program out of the political arena and were also very effective in leveraging funds by providing campus additional incentive to maintain activities with a positive track record. With the relatively small scale of the grants, resulting projects were thought to be more sustainable than larger projects, while still enhancing faculty self-efficacy as grant writers due to the recognition and visibility received.

The administration of the LCE Grants Program provided by the Director has also been identified as a strong positive feature of the program. Specifically mentioned were the annual reports to the board made by the program director, that were described as "critical and have shown good oversight and strong leadership by board staff." Through a variety of comments and references, respondents applauded the link between the program director and grant recipients calling the connection "clearly solid." Assessments of the RFP and proposal review process were similarly positive, resulting in an overall high rating of administrative practices for the program.

Along with praise for the ongoing management of the LCE Program came suggestions and urgent calls for improved data and assessment systems to support the grants and further development of learner-centered education. A critical question concerned the need to identify "what is considered evidence in this whole enterprise?" What kind of data is really expected from grantees and the overall initiative? "Is it enough to survey students and ask their impressions of their education or is it enough to survey faculty and say this is a list of learner-centered activities which are you using; or is the only valid evidence actually looking at transactions in the classroom? There was widespread recognition that to answer these questions adequately systems must be developed to support evaluation of learner-centered strategies.

**Recommendation #3: Allocate funds to support stronger evaluation of funded projects and the learner-centered activities they develop.**

**There was a consensus that over time sufficient resources should be set aside to make sure that evidence to support solid assessment of funded projects would be available in a timely and credible way. This implied investment in defining measures as well as developing the infrastructure for compiling evidence. It also recognized that the expertise to build strong evaluation designs was not routinely available to grantees.**

Embedded in the comments of many respondents, were suggestions for priority attention. These suggestions defined actions that might be taken by ABOR, university leadership, and principal investigators of individual grants. There is a clear sense of loyalty to the spirit of learner-centered education, but also a frequent sense of not fully understanding what the concept means or what is involved in developing a solid program around learner-centered principles. There is also a need for faculty professional development around building a professional dossier that makes appropriate reference to the work done on LCE grants.

**Recommendation #4: Develop links between learner-centered grant activity and faculty promotion and tenure processes.**

**If learner-centered education program development is to flourish, mechanisms for effectively incorporating the work into faculty tenure and promotion portfolios will be needed.**

Another important area needing attention was described as an issue of impact. The concern was best expressed as an issue of market penetration, or thinking about the degree to which learner-centered education was reaching faculty not already committed to its principles. While the present grant program strategy is credited with increasing discussion of learner-centered principles, it was generally not thought to have altered the campus culture significantly.

A final area of interest among faculty interviewed was a feeling that the impact of LCE grants was too narrowly defined by looking for direct impact and adoption decisions exclusively. While it was acknowledged that funded faculty and their classes were a primary target, they should not be viewed as the only way LCE grants impact campus culture.

The Regents Innovation Fund derives some key evaluation criteria from its funding source, Proposition 301. Funds from this special tax source are to focus on several areas of critical and emerging need for the state. The most relevant of these needs to the purposes of the Learner-Centered Education Grant Program is workforce development and access. While the overall LCE initiative is no longer an emerging activity or innovation, there is voluminous evidence of innovation in access to learning within the activities funded through the grant program. These efforts are emerging, experimental, and innovative.

**Recommendation #5: Initiate a focused effort to raise the profile of student outcome assessment activities to emphasize where the grant program is innovative and a value-added to instructional programs.**

**To enhance the innovative quality of the LCE Grant Program a fresh and invigorating approach to assessment is needed and would be widely supported by those interviewed. This seems to be a natural area for increased incentives within the funding priorities for grants. Whether adopted as a theme for one or two award cycles, advertised as a priority funding area, or developed as a special RFP for a tri-university collaborative project some expanded focus on assessment of learner outcomes seems critical to the future credibility of the learner-centered initiative.**

**Recommendation #6: Develop a fast-track option for expanding successful projects and those with promising innovations.**

**A "fast track" approval process for extension of projects showing promise as a result of the initial funding would provide a low risk opportunity to increase the impact of the grant program. The additional funding would be used to either further analyze data collected through evaluation activities built into the original proposal or disseminate those findings when warranted.**

An important theme sounded by several project directors suggested another area of expansion for the LCE initiative that would further support the original ABOR discussions of LCE. The theme is that of access to higher education opportunity. Through the innovation in access to higher education theme, these respondents felt that learner-centered education initiatives addressing cultural issues that impact student learning should be encouraged. As one PI noted, "I think the cultural access needs more attention that is something we need to heighten the rhetoric around. There is a disconnect between our discussion of LCE and our discussion about growing diversity, because with LCE we think about our current students, but the demographics remind us that we are not serving all of whom we must serve. Can we become learner-centered around the needs of students we are not yet serving but need to serve?"

**Recommendation #7: Focus grant program priorities to recognize emerging educational issues facing the system, such as the implications of growing student diversity.**

**Developing a set of learner-centered initiatives focused on the underlying educational issues heightened by the growing diversity of Arizona's potential student population would bridge the innovation in access and workforce development criteria of Proposition 301 funding, further centralizing the grant program as an important Regent initiative.**

There is considerable although not unanimous support for continuing the LCE Grant Program. However even those who strongly encouraged program continuation, were open to and encouraging of possible modifications of the program in the future.

**Recommendation #8: Develop an impact plan and goals tied to clear outcome expectations for the overall grant program.**

**A first step in designing a future for the grant program is the specification of outcomes desired from the program. If an impact plan were developed as part of the extension of the grant program, it would provide an opportunity to join together the overall goals for the initiative and the strategic selection of grant awardees. With a goal and strategy for overall impact, annual themes or selection priorities for grants could become a mechanism for directing resources towards the intended outcomes. Without an impact plan, proposal review rates the merits of the program ideas in a vacuum without a clear sense of the intended cumulative impact of the grant program.**

An impact plan would prepare the program for future questions of whether it has met its intended purposes, providing a clearer basis for future decisions.

There is enormous evidence that learner-centered activities on the campuses have been positively impacted by the availability of the grants and that faculty conversations about learner-centered education have been impacted among faculty closely aligned with funded projects. What is missing is evidence that the projects have had impact beyond the narrow corridors of funded activities or that the impacts on involved faculty are sustained over time. An important way to better identify and improve this track record for the future is to create a stronger link between the grant program and campus priorities. The mechanism for this connection has been built into the design of the grants program through the composition of the LCE Team and LCE Advisory Committee yet it has not materialized in the eyes of many of these key liaisons. If the Provost can be viewed as the key figure in campus academic priority setting and recognition, their appointments to the Advisory Committee and their participation on the LCE Team must benefit more from the overlap. Structurally the mechanism for further coordination already seems to exist.

> **Recommendation #9: Through use of the existing grant program structure, examine the alignment between the grant program and campus funding priorities**
>
> **To increase the likelihood of sustainability and ongoing campus support for successful innovations, the link with campus planning priorities must be strengthened. To enhance this linkage the LCE Team should discuss whether the label of learner-centered inhibits thinking of the program as aligned with campus priorities and adjust the label accordingly. Additionally the team should consider using funding themes or priorities to create a stronger fit with campus priorities as the recent focus on entry level courses seems to have accomplished.**

A more visible and vigorous contribution to student outcome assessment discussions would be almost certain to create a better sense of alignment between grant program and campus priorities.

## III. Closing Comment

The decision facing the LCE Team is to determine what is reasonable to expect from centralized encouragement of curricular transformation. Once the desired goals are clearly defined, the views and experiences of those involved in the LCE grant program can be used to inform the discussion regarding how far the system has been able to come with the investment made to date. Ultimately no strategy will have the power to change people, if it does not have the support from campus leadership necessary to make it an integral part of general campus direction. The comments and recommendations collected in this evaluation provide strong support for continuing some form of the current effort to engage individual faculty in innovation, while simultaneously urging the strengthening of important central campus endorsement and coordination of these efforts.

# Evaluation of the Arizona Board of Regents Learner-Centered Education Initiative

In April 1999, the Arizona Board of Regents began discussions of Learner-Centered Education. Ultimately the Board approved a five-year program of competitive grants for faculty to improve and expand learner-centered education across the university system. The 2005 -06 cycle of grant competition represents the fifth year of the program, and this external evaluation has been commissioned by the LCE Team to assist in deliberations regarding the future of the program. Evaluation results and recommendations reported here are based upon activities occurring Fall 2005, to support a program decision during Spring 2006. A three person team, headed by Melvin E. Hall, provided the staffing for the evaluation and files this report.

## Evaluation Project Overview

The boundaries of the object of this evaluation (evaluand) have been defined by the LCE Team, including determination of the "unit of analysis" or focus for the evaluation. Among the many available options, this evaluation is limited to the university system level of analysis and draws upon campus data only to the extent it may inform system level decision-making. In defining the evaluand this way, the historical development of the program, use of the Regent's Innovation Fund to support implementation, and day-to-day operations of the program are central concerns. Campus case studies are included here as a series of attachments descriptive of the implementation of the funded grant programs at each institution. However no campus level analysis or conclusions are supported by this study or attachments.

The grant program created by the Regents is characterized by awards that are limited in amount and duration. To be eligible a proposal must fit one of four categories:

    Faculty and Staff Professional Development
    Modification of Program, Course, or Course Module
    Research Grant
    Assessment of Learning Outcomes

Three funding ranges guide award amounts and are based upon the scope of initial project impact. Levels of impact are designated as: individual course or program, multiple departments or campus-wide, and multiple university projects.

The grant program was established to support short term, high priority projects. The funds are expected to support new innovative projects and unforeseen or short-term needs that fall within the framework of learner-centered education. The source of funds utilized in creating these awards also placed limitations on the duration and scope of the program. For example, awards were limited to one year or grant cycle. Projects needing extended funding are required to reapply and compete for funds during applicable grant cycles. Grant funds are also restricted and cannot be used to replace or supplant other state support.

Proposal writers are required to define the expected results or outcomes of the project, including defining appropriate performance measures, means of assessment, and plans for sustainability of the project. Other key elements of the proposal process include:

    Definable Milestones
    Baseline Measures
    Proposed Performance Goals
    Dissemination Plans

Criteria used to evaluate proposals include[1]:

**Educational merit** defined as offering a creative, innovative and learner-centered approach to a new or existing educational program or course that meets the needs of Arizona students; additionally educational merit includes ability to leverage scarce resources by collaborating with other entities and its feasibility for implementation

**Appropriate budget** is defined as clear evidence that the funds will accomplish the objectives

**Impact of project** – on courses or students

**Student engagement –** level of student involvement input and participation

**Scalability and or portability –** Implementable at a different institution

**Relevance of performance measures –** extent to which performance measures support ABOR and LCE priorities

**Commitment to sustainability –** department or college support anticipated after the grant is over

**Multi-University Proposals:** advisory committee appointed by AFC

**Proposals promising to promote Learner-Centered Education throughout the ABOR system through** inter and intra-institutional collaboration to enhance student learning, result in wider distribution of learner-centered education; and/or demonstrate efficient use of resources are particularly welcome and encouraged.

The grant program is overseen by the LCE Team, which provides general oversight, approves funding for grants, and approves substantive changes to grant processes or criteria. This group is composed of 9 people by design but currently has fewer than the three regents recommended in program guidelines. The LCE Team additionally includes each university Provost and three faculty representatives. An LCE Grants Advisory Council works with the LCE Team and program director in managing the proposal review process and recommending substantive changes to the LCE Team. It is significant that university appointees join AFC members in comprising this very active and central advisory committee. (See attached organization chart)

The detailed work of proposal review is accomplished by a Grant Review Panel comprised of a series of university-based proposal review teams. Each of these teams includes a Provost Appointee and 2 Arizona Faculties Council (AFC) appointees. One Provost Appointee and One AFC member from each campus are co-coordinators for the campus and oversee training of reviewers and also participate in the grant selection process.

The program is supported by an extensive array of web-based material that provides resources to support potential proposal developers, grantees, and others seeking information about learner-centered education. The site and its links also serve as a primary dissemination tool for project reports and artifacts.

Among the website features are a variety of documents providing the foundation for learner-centered educational practices encouraged by the grant program. Three important examples of web site documents are the definition of learner-centered education, guiding principles for being learner-centered, and a proposal outlining a strategy for promoting learner-centered education across the Arizona University System.

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[1] Criteria excerpted from 2004-05 Grant Program Request for Proposals

## LCE Program Origin

The Arizona Board of Regents (ABOR) began discussion of Learner-Centered Education (LCE) with a study session featuring a presentation by Alan Guskin.  Mr. Guskin's presentation was based on the article, *Learning More…Spending Less*, in which he defined learner-centered change and provided a rationale for its importance to the future of higher education.  This presentation, at the invitation of members of the Arizona Board of Regents, was intended to build a sense of urgency for consideration of changes that might be made in Arizona.  The invited participants in this study session included members of the State Board of Directors for Community Colleges of Arizona, members of the ten Community College District Governing Boards, and community college presidents.

Following this presentation and discussion the universities were asked to prepare summaries of current learner-centered activities.  Minutes of the subsequent Board of Regents meeting indicate that the ABOR president also asked university presidents to work with the Arizona Faculties Council in developing a plan for "discussing learning-centered change as a vehicle for improving higher education."

The conversations generated by this request brought faculty leaders together with university leaders and Regents to discuss the key issues facing Arizona and how learner-centered changes could help define an improved state system of higher education.  Those involved in these discussions differed in their priorities and sense of urgency regarding the issues but momentum continued to build for some broad response to the concerns.  Subsequent Board of Regents meetings included extensive discussions, presentations, and planning pursuant to the development of "a work plan showing goals and timelines that would show how to pursue learner-centered change on the campuses."

In addition to discussions during ABOR meetings, key members of the Board of Regents determined that Arizona could benefit from having university system leaders attend a conference on higher education as a team.  Ultimately two regents, a board staff member, and several faculty members attended the conference.  Those who attended the conference became key figures in the ensuing discussions of learner-centered education.  From this series of board meeting discussions and study sessions, the foundation for the LCE grant program emerged.

By August 1999 the Arizona Faculties Council had developed a set of guiding principles for learner-centered education adopted by the Board of Regents.  The following January the Board officially approved the AFC developed definition of learner-centered education and one month later the Board accepted "Towards Promoting An Environment For Learner-Centered Education: A Proposal" submitted by the team of Regents, staff, and faculty who attended the Florida conference.  By August 2001 the LCE Team (composed of two Regents, the chief academic officers of the system, and faculty representatives of the Arizona Faculties Council) was in place and had done an analysis of system policies to identify those that might serve as barriers to the further development of learner-centered initiatives.

High hopes were placed on the potential learner-centered higher education reforms under discussion.  Faculty members, through the elected members of the Arizona Faculties Council, were supportive of these discussions because it brought the focus of the Regents to their work.  As reported in the June 1999 ABOR meeting minutes, "After an initial review of the scope of learner-centered activities within the Arizona University System, it is apparent that substantial learner-centered activities are in place, and that these innovations date back more than five years in some cases."  The learner-centered education initiative put the spotlight on the work of faculty in Arizona universities in a manner viewed positively by all concerned.

Among the Regents, a variety of issues drove interest and engagement in learner-centered education discussions.  One Regent felt learner-centered education held the potential to eventually change how higher education was provided to students.  Based upon extensive involvement in working with the deans

of the Colleges of Education, this Regent wanted to emphasize teaching teacher candidates using learner centered education strategies "since they tend to teach the way they are taught."  The hope was that through promoting learner-centered education in Colleges of Education the paradigm of education across the entire spectrum would be impacted.  Another Regent was motivated by a belief that everyone learns differently and teaching that matched special needs was critical to learner success.  This motivated an interest in broad-based experimentation and innovation across many disciplines with learner-centeredness as a guiding principle.

From these different perspectives the LCE Team came to a common belief that it was important to guide educational advancement by assessing learning rather than simply counting "seat time" and students must recognize it was their responsibility to learn.  To promote the concept of learner-centeredness one of its central features, assessment, was embedded in the process for program review.  All of these potential changes would take time, and of course resources.


## Enabling Policies and Board Actions

The development of learner-centered initiatives provided one of the few instances where board members worked directly with faculty.  The direction and management of universities flows through university presidents and provosts, with faculty engagement defined under the watchful eye of this overarching set of administrative relationships and expectations.  Learner-centered education provided faculty an important opportunity to influence policy more directly, and Regents a more direct engagement with matters focused in the classrooms of the system.  Provosts were most noticeably resistant to this break with the tradition of funds and decisions flowing from the Regents, to University leadership, and on to implementation through regular university systems.

In addition to the nontraditional collaboration opportunity, the learner-centered initiative provided an opportunity to pull together many efforts previously unlabeled or called something other than learner-centered.  As one example, prior efforts labeled "Student-Centered" were thought to be synonymous with Learner-centered strategies.  Those involved in developing the definition and scope of learner-centered education were also aware of the many tradeoffs and challenges of this definition process.  They tried to create an Arizona definition that opened LCE up to all applicable dimensions including assessing how well learner-centered education worked, and doing research into best methods of LCE.  In their discussions the group:

> Did not want to restrict it to a few narrow things that certain people attached to it...did you have to use technology?  No you could, but don't have to.

For several years, learner-centered education served as the focal point of Board discussions regarding the future needs of the system and how they might be met.

Initially the discussion of learner-centered education was viewed alternately as either promoting something that would cost too much money or something that the system was already spending significant resources to accomplish.  Both views prevailed as the Regents recognized and applauded ongoing efforts identified as learner-centered, yet admonished the universities that much more would be needed to face the challenges of the future.  Resources to accomplish these goals were therefore an important topic of discussion. During this time the statewide initiative labeled Proposition 301 was passed by the voters of Arizona, providing an infusion of additional state support for education at all levels.  The Regents, in determining the university system allocation of these funds, chose to retain a portion of the higher education dollars to create the Regents Innovation Fund as a set aside for short term funding of special needs.  At the time there were two ideas under development that required resources, The Regents University and learner-centered education.  The availability of resources from the Regents Innovation Fund provided the impetus to move forward with the development of learner-centered education.  The Regents authorized $500,000 from the Regents Innovation Fund for faculty grants to

improve and expand learner-centered education. One Regent recalls suggesting that if faculty were to be expected to innovate and experiment with learner-centered education they would have to be provided funds to support this effort. Although LCE as a discussion item and priority of the Board came much earlier than Prop 301, no money was invested until Prop 301 funds began to flow into the system.

As a program of competitive grants was conceptualized, the Regents innovation fund dollars solidified the direct Regent/faculty working relationship that had characterized early development of the initiative. With this formalization of funding, learner-centered education became a source of some tension between universities and the board, as the Board wanted and retained some flexibility in how these funds would be utilized. There was an agreement that learner-centered education should be evaluated against other emerging needs of the university system however nothing came along to challenge the funding for the competitive grant program. The learner-centered initiative rolled along through its initial five years of authorization, extending well beyond the board terms of Regents initially responsible for its creation. With the arrival of the end of the initial five year authorization period, this evaluation was commissioned to provide information to support a decision, which will be made by Regents who were not a part of the initial discussions and establishment of the program

## Evaluation Purposes and Methodology

In defining the purpose of the evaluation, the LCE Team has prioritized two goals as central to the evaluation, including:

3. To determine if the program provides added value to the university system.
4. To gather evidence for a recommendation to the Regents regarding another 5 years of funding.

The evaluation has been further organized by three questions which provide focus and scope to the evaluation. These questions are:

4. Is there evidence that the funded projects have increased/improved the infusion of learner centered education into the universities' educational environment?
5. How well does the LCE grant program match the priorities for the Regents' innovation fund?
6. Has the grant program met its intended purposes?

In pursuing these questions, the evaluation draws upon interviews, observations, historical records, and case studies provided by campus LCE Coordinators. The process utilized in the evaluation is intended to stimulate analysis and reflection by all stakeholders of the initiative, in a manner that promotes widespread engagement with the evaluation issues. Although not an exclusive match, the first focus question regarding evidence of increased/improved infusion of learner-centered education maps onto the first goal of the evaluation while the remaining two questions support the second goal identified by the LCE Team.

## Suggested Criteria, Standards, Rules of Evidence

Learner-centered education was discussed and pursued as a way to respond to a plethora of issues already impacting higher education and anticipated in the future. The grant program was the mechanism chosen to operationalize learner-centered education and was designed with recognition that considerable related activity already existed in Arizona universities. As the primary outcome of considerable Board discussion regarding learner-centered education, it is perhaps tempting to judge the program by the original goals discussed for learner-centered education. However comparison to the early discussions of the Board would be inappropriate since the scope of the grant program is significantly smaller than the activities proposed in the ABOR Learner-Centered Proposal of February 2000; and, that proposal was simply a proposal to develop a plan. That formal plan appears to have been usurped by the creation of the grants program.

The creation of the LCE Grants Program was marked by what one Regent called "a very open process" suggesting that there was not much sophistication in the beginning regarding processes and standards. There are two very important ramifications of this in the implementation of the LCE grant program. First, there was no formal review or survey of existing learner-centered activity already in place when the grant program was launched. This makes the baseline of learner-centered activity across the university system unspecified and not available as a point of comparison to current levels of activity. Second, the launching of the grant program without specific criteria of success results in a post hoc analysis of what has been achieved that is not informed by specific goals against which these outcomes can be analyzed. Despite the fact that the LCE Grant Program is an expression of Regent belief in the efficacy of learner-centered education as a way to transform higher education, the grant program can only be reviewed based upon what it has specifically funded, not for the transformative impact it may have had on the system at large.

In view of the absence of specified criteria against which the grant program can be judged, one of the interview questions posed asked respondents to suggest criteria they felt should be used in making judgments about the future of the program. This exercise was intended to provide a window into the expectations of those involved in the grant program and a starting place for the development of clear success criteria for the future. Thinking evaluatively requires defining what connotes success, identifying the important criteria that must be attained for the effort to meet the desired goal. With criteria identified, standards or necessary levels of performance against each criterion measure can be established. After standards are identified rules defining what qualifies as credible evidence can also be established. Within this framework program outcomes can be fairly judged against an agreed upon set of criteria, and important decisions regarding priorities for data gathering can be consistently orchestrated. When the question of evaluative criteria was posed during interviews, several ideas were offered prompting the following observations:

1. There is currently little differentiation between expectations for individual grantee performance and the overall grant program. While the individual grants are understandably the most visible and concrete aspect of the program, in the aggregate the program might be expected to have an impact beyond the accomplishments of individual grants. What was originally discussed as a desirable goal of learner-centered education was a purposeful transformation of higher education. Without clear and specific goals in this regard, the program fails to rise above the individual projects and have a profile consistent with these early hopes. It further leaves no basis for determining if the total expenditure of the grants program is justified by what has been produced.
2. There is also a general lack of specificity in what individual grants are expected to achieve. For some the grants should result in a quantifiable product or outcome. For others a thoughtful report was sufficient. In either case determining how much should be expected from grants given their limited amount, duration, and other constraints is an element of the proposal review process that should be elevated in visibility. By making the goals of individual grants clearer, it would help others envision what the overall grant program might be expected to produce.
3. Another area of ambiguity surrounds the kind of impact appropriate for grants in this program. Are they expected to routinely impact faculty beyond those immediately involved? Is there a preference between impacts that are minimal and short term but broad in reach across the campus, versus more significant and long-term impact on a smaller group? Again the evaluation of individual proposals provides an opportunity for a holistic assessment of what the proposal promises to produce in comparison to the resources requested to support the activity, but the overall grants program does not conjure up a clear or consistent image of intended impact.
4. There was consistent and clear expectation that grants would produce sustainable results, impact student learning at some level, and positively impact institutional capacity in learner-centered education. It was not clear what level of aggregate success was expected of the overall set of grants funded. The question is how much organization change or transformation can be expected for $500,000 per year?
5. One clearly articulated response to the criteria question both suggested that impact across the entire system was an important criterion, and asserted that the present configuration of the program falls short in this regard. Although not a widely held view, this perspective is based upon

the concern that the present program will only impact a small number of instructors and a small number of students, resulting in a breadth and depth of impact that is not efficient.

With many interviewees, the question of possible criteria for evaluating the grants program prompted suggestions of how to improve the way information is accumulated regarding the impact of the present system.  Examples of these suggestions include:

1. "I think you can measure other things beyond students and teachers directly involved in funded projects, for example look at what impact the grants have on those who don't get a grant."
2. "What can be done to encourage more tri-university programs that promote more collaboration? With some additional money added for coordination, we could encourage travel and getting people together to work things out."
3. A point on which there were divergent opinions was the strategic advantage of focusing the grant program on entry level students.  This strategy assumed that learner-centered strategies were "endemic" to upper level instruction.  A contrasting view held that for many disciplines, upper level instruction also occurred in large lecture hall settings and focus at that level would bring many benefits.  Reflective of these differences in point of view were two comments in particular.

   "I think that it was a good move to focus on entry level courses…that is a good place to start. I was appreciative of that direction…before it could be anything, graduate or outreach to high school students could be anything or totally faculty development."

   "Focus on 300 and 400 courses because by then students have been lectured enough."

   There appears to be a disciplinary bias in these responses, with science faculty more likely to support the upper-division courses focus in addition to work with entry level courses.
4. Can we identify the problems encountered in grant programs so that they can inform others attempting similar projects?
5. "What we have heard is what successful teachers think about the process, we have not heard from students regarding their assessment.  Maybe we are measuring by listening to the wrong person."  Doing some post-class interviewing of students seems warranted.
6. "One might review LCE and determine that it should have permanent funds rather than temporary funds from the Innovation Funds."
7. "We need to be better at accepting where students are.  Have we actually accomplished that with whatever we are doing now?  Before each class was offered, were students assessed for what they know; then assessed again at the end?  It is important to know what levels of knowledge students come in with."
8. "Looking overall at aggregate trajectories without attempting to tie everything back to individual initiatives seems warranted given the level of activity funded."

For other respondents the criteria question lead to questions which were more musings than directives for analysis.  Questions raised in this manner included:

- "Are some disciplines more conducive to LCE than others?"
- "Is this process of Regents reviewing individual proposals the best way to promote learner centeredness?  There is no stick that encourages faculty to be learner centered."
- "In the future, should all of these grants be encouraged on a multiple teacher basis?"
- "Why don't we require all of the teachers in a cohort to use similar methods for purposes of comparison?"

The question of what criteria to use in evaluating the LCE Grant Program, elicited a variety of additional responses and ideas that appear later in this report.  The range of comments and concerns point to a critical need to articulate and publish a set of criteria which can be used to determine if the overall grants program is meeting objectives.  Where no criteria and standards are formally posted, every wish and desire has legitimate claim as a basis for evaluation.

## Recommendation #1: Develop clear and measurable goals for the grant program.

**The grant program would benefit from clear and measurable goals. These goals would assist in defining how the overall program of grants is expected to impact the university system, in contrast with the expected impact of individually funded projects. These goals would also address the question of how much impact is expected for the level of funding associated with the grant program, and the anticipated nature of this impact on students, faculty, and staff.**

## Impressions, Suggestions, and Analysis

Across all interviews and document review, one of the most frequently raised issues was the term "learner-centered." Normally it would be unsettling to have the key element of a program contested by so many participants, but in this case there was little concern about the substantive areas addressed by the grant program simply a sense that the term learner-centered came with some baggage that could be avoided with other labels. Among the issues cited was a concern that "for some faculty the label means turning things over to the students…putting students in charge of the class." Another faculty member was quoted as saying "well that is college of education stuff." Given the distraction caused by the label, reframing would be useful.

Suggested replacement labels were variations on the words currently in use. One interviewee said, "I like active learning more than learner-centered," while another stated, "We have started calling it Learning Centered because we found that it helps faculty hone in on the fact that it is not about the student but what they are learning." Another suggestion was to augment current terminology by adding the term Learner-sighted (seeing things from the student perspective) and use that to inform your teaching.

For one respondent the issue was deeper than syntax and indicated that, "If it were up to me it {the focus} would be broader innovation in teaching...because students learn in different ways and faculty teach in different ways. You could remain focused on learner centered but...the real focus should be mass customized innovation." A similar sentiment was expressed as, "We need more than LCE, like a teaching academy." Despite the frequency with which the label learner-centered was discussed, none of the comments suggested that the term posed as more than a limiting factor in the success and appeal of the grant program.

Another area of common agreement was related to the observation that the program links regents and faculty in a way that is nontraditional. However despite this agreement on the nontraditional nature of the relationship, not everyone felt the relationship was a significant or even salient feature of the program. The significance of this direct link with the Board was described as "unknown but probably not much." For individual faculty, having a grant award that carried the imprimatur of the Regents brought additional meaning and currency to the award. Yet even faculty impressed by this connection to the Regents were not inclined to see it as a major program benefit because it did not have noticeable impact in promotion and tenure decisions.

Several emerging issues were identified by respondents as they reflected on their personal sense of what the program was intended to accomplish and how those goals would best be advanced. One such observation had to do with the relatively high percentage of funded projects with a technology focus. An early proponent of learner-centered education stated that, "The bulk of the emphasis was not to be on-line but in the classroom. A lot of the projects have been Internet based which is fine, but I thought that the change required classroom cohesiveness to stick."

Similarly, this question of project focus prompted another respondent to say, "So while most of the projects have focused upon building particular course modules there have been some and it would be nice to encourage more, research oriented or assessment oriented projects."

## Program Structure Issues

As previously discussed, the nontraditional link between Regents and faculty defined by the grant program was received with mixed reactions most notably by the university provosts. Beyond the Provost's concerns, several respondents discussed related issues affecting the long-term impact of the program. Two key dimensions occurred most frequently. First, the present program design makes alignment of grant awards with university priorities inconsistent at best limiting the potential for infusion of campus funds even if the project demonstrates promise for sustainability. Second, the pattern of individual awards rewarded faculty innovation yet failed to ensure that faculty working on similar ideas would collaborate or even recognize that similar work was underway. A dynamic tension was created between options for maximizing the incentive for innovation by rewarding faculty initiative, and maximizing long-term impact by leveraging awards with institutional funds and central campus support or engagement.

As interviews evolved, discussion of alternative strategies for organizing the grant program began to surface. A central theme of these alternative strategies was some form of blocking grant awards either in larger grants to individual universities that were re-granted to faculty on a competitive basis, or what was described as bundling of grant proposals by each university. While these suggestions came up regularly in interviews the net consensus was that any change from the present system could potentially hurt more than it would help. Illustrative of the dilemma are the perspectives highlighted below.

## On campus block grants:

"that could be good, the only difficulty I see is that there would be enormous pressure to divide the money in a proportional way. One of the things we have done is to say we would not dictate how the money was split but rather we would have the proposals stand on their own merits."

"that would take away some of the work of reviewing proposals but it would also take away the principle that the money goes to merit and is an incentive for good ideas. Awards would become more of an equity issue, that's the disadvantage."

"I don't think that it would make a difference. I think the current process can be fairer...then you don't have any doubts about why the grants are being judged in certain way."

"first reaction is positive, we could prioritize how we use those resources in relation to our institutional agenda, but downside is that it could reduce faculty creativity if there wasn't a window or opportunity for them to apply as individuals. I also would say that another downfall would be on a campus like this where we encourage faculty to engage in a scholarship of teaching. This would diminish faculty opportunity for external support for this activity, and the recognition that comes with external recognition."

Another option explored was maintaining individual PIs for the grants, but bundling them at the campus level.

"this would be a good idea, although we have had a number of good tri-university proposals which would probably become rare under this type of system. Portability is a key element of this concern."

"It depends upon how the bundling is done, if bundling is done across universities to insure that all had a tri-university effect...I would prefer this to bundling at the campus level in isolation."

"We are presently organizing our review process and it looks very cumbersome to me...does it need to be that cumbersome? Perhaps if there were a block grant we could find other ways to be more efficient in the review process--if there were fewer faculty involved in the review process it may also

reduce opportunity to get the word out and build support and ownership. The number of faculty involved is increased because of the review process. Because these grants are done in a manner that is so different from how other ABOR funds are disbursed."

"this would require some coordination and organization pulling these things together...with this I would fear using the money for things other the projects themselves...some of the money would be siphoned off to do the coordinating."

Other suggestions focused directly on the issues of campus level integration into the priorities for proposals:

"I can see where, when the LCE folks come out with their priorities, an institution could say within that framework of priorities we would like to emphasize XXX here or identify some of the strategies or areas the campus would like to target. This adds another layer that would have to be made known to the reviewers. But I worry about whether you knock out people from participating when you narrow the scope too much."

Across the various comments and suggestions, the remarks which best captured the general sentiment expressed state,

"I would love to see the program continued to be funded in one way or another. But if that is done I would love to see some kind of synergy that happens among/between all of these little discrete grants if the money continues to be awarded in the current way because we need more than anything for people to begin talking on this campus."

"I think faculty members look forward to participating, {in the grant program} that alone is good even if the ideas are a bit fuzzy or the motives sometimes questionable."

**Recommendation #2: Utilize campus appointees to grant program committees to increase synergy between grantees on each campus and across campus boundaries.**

**The grants program currently includes significant campus representation through the participation of Provosts on the LCE Team, Provost appointees to the Advisory Committee and Provost appointees to campus level review teams. The goal of better synergy across each campus and between campuses might begin with attention to ways of enhancing the communication between these campus representatives, campus planning and priority setting activities, and faculty across each campus.**


## Positive Experiences

The preponderance of information collected during this review highlighted very positive experiences of grant recipients. A very common statement indicated that the proposal writer "Had the idea before the LCE grants were announced but did not know how we would do it." The availability of this funding source has had a clear and significant impact upon the recipients and their respective programs. Given the scope of this evaluation only a limited sample of project principal investigators were interviewed, however a significant percentage of those contacted for this study indicated that the LCE grant was among the first grant applications they had prepared. While not a central goal for the program, the initiation of new faculty into grant writing is a significant contribution to those faculty careers. One respondent noted " I wrote this proposal my first year as a faculty member, many people wanted it but I volunteered to write the proposal because I was underutilized at the time. Since then I have become a proposal writer. I ran the center for the first two years and then stepped down when I became chair of the faculty." A similar story was told by the faculty member who said, "It was the first grant that I really wrote. It was just the right amount of time and resources to get me started. It is a good seed for grant ideas and engagement."

In addition to assisting faculty to get started in grantsmanship the LCE Grants Program was also thought to provide a source of external funding for faculty in disciplines where limited options for external support exist.

Another frequent theme described how the grant funds supported the beginning of an activity that has been sustained with funds from other sources. One example of this sustainability was the Human Events Writing Center of ASU's Barrett Honors College, where:

> Our writing center is composed of students who have completed the course and are then trained to work with other students. The grant allowed us to start this but we have continued to support it with college funds. It has now been expanded beyond the Human Events Course. I believe very strongly in the grants, this is an important activity and we wanted to do it but had no way to make it happen.

Another example of an LCE Grant initiated activity which has been sustained is The Communications Assessment and Learning Lab (CALL) of ASU West. Following initial funding through an LCE grant, CALL has been sustained and expanded, including current contract work with state agencies and other non-university entities that allow the lab to continue to sustain itself. There are also examples of LCE grant funding that has sponsored effective activities that impact students at the point of retention, "when we focus on entry level courses."

## Other illustrative comments include:

> The present funding level keeps it out of political arena and is consistent with Prop 301 initiative...you are not going to get a huge payoff in any other way than the improvement in teaching/learning

> I also participated in the first tri-university grant on LCE. I met Tom Flemming {UA faculty member} who uses the responders in class and now I use a low tech version of that.

> Our grant was for 15K and that has directly influenced so much student and faculty learning...our writing center gives feedback to instructors about their class. i.e. if the tutor does not understand the writing prompt their feedback to the instructor is valuable...this extra layer of feedback is critical.

> Very effective in leveraging funds by providing campus additional incentive to maintain activities with a positive track record

> Scale of the grants is more sustainable than larger grants would be

> Covering one time costs (start up) provides catalytic function

> Enhances faculty self-efficacy in grants arena

> Grants may not radically change what is going on, but they add momentum to those faculty and ideas that are funded

> We even went out in the community and got another grant to support the work of the LCE grant.

> The beauty of this is that the regents can influence where we go...but I view this money as a communication tool. It gives us as a college a way to communicate with the Regents about what we are doing.

> I am thankful for the opportunity from ABOR and feel that even if we weren't funded it was a great exercise to go through identifying how we might improve instruction and learning.

Newbies like me need to be scaffolded and mentored through this process.

The administration of the LCE Grants Program provided by the Director has also been identified as a strong positive feature of the program. Specifically mentioned were the annual reports to the board made by the program director, that were described as "critical and have shown good oversight and strong leadership by board staff." A corroborating comment was offered by another interviewee: "One of the best things I appreciated was the ongoing contact with Stephanie, she came to campus twice...you knew there was a sense of accountability but she showed genuine interest in the grants asking how are you coming how have you changed your plans." Through a variety of comments and references, respondents applauded the link between the program director and grant recipients calling the connection "clearly solid."

Assessments of the RFP and proposal review process were similarly positive. "The call was just right, just the right amount of detail and requirements. Proposal process is pretty simple and straight forward. I like the fact that it is brief to the point and my experience at the administrative level has been excellent. We received approval notice when they said we would. This is much easier than the ITQ--I have reviewed both and from my perspective the LCE grants program is running well."

## Needed Data and Systems

Along with praise for the ongoing management of the LCE Program came suggestions and urgent calls for improved data and assessment systems to support the grants and further development of learner-centered education. A critical question concerned the need to identify "what is considered evidence in this whole enterprise?" What kind of data is really expected from grantees and the overall initiative? "Is it enough to survey students and ask their impressions of their education or is it enough to survey faculty and say this is a list of learner-centered activities which are you using; or is the only valid evidence actually looking at transactions in the classroom?

There was widespread recognition that to answer these questions adequately systems must be developed to support evaluation of learner-centered strategies. "If we are going to do this in a serious way, a data driven way, somebody is going to have to do that…go into a classroom and be an objective observer in a random sample of classes; large and small. It might be a good tri-university proposal, since each campus has its own culture and priority…this would also ensure consistency across campuses." Maybe an RFP could be written regarding how this could be done and the campuses could respond. Another great project would be a longitudinal look at a cohort of students that have had an lce class early on."

There was a consensus that over time the systematic impact of funded projects should be measured, and that the Proposition 301 metrics used with other programs were not sufficient for evaluation of LCE grants. There was a general admonition to the program that it should spend the necessary resources to make sure that evidence to support solid assessment of funded projects would be available in a timely and credible way.

**Recommendation #3: Allocate funds to support stronger evaluation of funded projects and the learner-centered activities they develop.**

> **There was a consensus that over time sufficient resources should be set aside to make sure that evidence to support solid assessment of funded projects would be available in a timely and credible way. This implied investment in defining measures as well as developing the infrastructure for compiling evidence. It also recognized that the expertise to build strong evaluation designs was not routinely available to grantees.**

## Areas Requiring Some Attention

Embedded in the comments of many respondents, were suggestions for priority attention. These suggestions defined actions that might be taken by ABOR, university leadership, and principal investigators of individual grants. Beginning with the suggestions for ABOR action, there was significant support for continuation and enhancement of forums to help faculty prepare to write LCE proposals. A respondent made this request despite knowing that

> "There have been attempts to educate faculty about these grants...I don't think this has been sufficient. Here is something ABOR could fund for all of the campuses...if {The Campus Professional Development Program} has money to offer sessions on:
>     What is LCE?
>     How do you apply for education based grants?
>     What is an appropriate question?
>     Where do you look for the research base?
>     What does a good project look like?
>     How do you document effectiveness?
>     What is appropriate evidence?
> That may also improve the quality of what is submitted."

There is a clear sense of loyalty to the spirit of learner-centered education, but also a frequent sense of not fully understanding what the concept means or what is involved in developing a solid program around learner-centered principles. There is also a need for faculty professional development around building a professional dossier that makes appropriate reference to the work done on LCE grants. As one faculty member noted, "If I am a chemist and do action research on my class and show improvement in student learning, where do I show that in my promotion and tenure materials?" If learner-centered education program development is expected to flourish, someone in authority will need to announce that this work is important and committees should look for evidence of this work in tenure or promotion portfolios.

**Recommendation #4: Develop links between learner-centered grant activity and faculty promotion and tenure processes.**

> **If learner-centered education program development is to flourish, mechanisms for effectively incorporating the work into faculty tenure and promotion portfolios will be needed.**

In addition to wishes expressed for more training and recognition regarding the work on LCE grants, faculty expressed some concern about the official ABOR definition of learner-centeredness. One campus LCE proponent indicated that "one of the things we have attempted to do this year is expand it {LCE definition} to include APA {American Psychological Association} principles, because they have a much more comprehensive explanation of learner-centered education. The concerns about the definition generally related to a feeling that it was limiting and failed to capture some of the exciting innovations that were occurring, but additionally that it has a potential for being interpreted in ways that would make LCE very superficial.

Another important area needing attention was described as an issue of impact. The concern was best expressed as an issue of market penetration, or thinking about the degree to which learner-centered education was reaching faculty not already committed to its principles. For some respondents increasing the number of tri university grants would help in increasing the "permeation of this type of thinking throughout the system...this is hard to do with a lot of little grants it is happening much more than it used to but it still remains isolated and preaching to the choir. The larger scale high impact training grants for training large groups of faculty have the potential for drawing in people who could be persuaded to this style of teaching but would not apply on their own." While the present grant program strategy is credited with increasing discussion of learner-centered principles, it was generally not thought to have altered the campus culture significantly.

Not everyone agreed that tri university grants were the solution to the impact problem. For one faculty member this limitation in impact was the result of where the impact occurred, rather than how much. "No we see no difference between tri-university and individual grants in terms of the campus level impact. Tri university grants seem to focus on teaching and learning centers or faculty development so I don't see the impact on the campus." Yet another view recast the impact issue as a product of a focus that was too limited. This perspective advocated for a more balanced approach to developing learner-centered education, one that identified the critical group of adopters as including students as well as faculty. Their observation was that the

> "LCE movement certainly here and perhaps everywhere in its inception is a completely teacher centered movement. What do we do to spread LCE? We do teacher development and expect students to just follow along with however we change things. But we hear often of student resistance to that and for lots of reasons. One of which is that no body bothers to explain what this is and why they should be interested. We are asking them to do things that are contrary to what they expect or have seen before. How do we talk with students about what learner centeredness is and not talk at them, allowing them to contribute to what happens. And how do we get faculty to trust what students say about their learning experiences inside and outside of class."

A part of this concern regarding how learner-centeredness was being defined, extended to a critique of a pattern reflected in some grant proposals. The concern addressed the degree of learner-centeredness reflected in the curricular reforms and course changes proposed for funding. As a proposal reviewer noted, "Of those recommended for funding, several of the LCE programs were consistent with what we were looking for, but a lot of them were learner-centered by making a web site for my class, or hiring my graduate assistant to make flash graphics for my class...so it seemed that what some wanted to do was sort of outside the scope of the class and not really a lot of curriculum re-design...not really thinking about your class and your role as a teacher...which is what our faculty that are really learner-centered do. Some were looking for what could be packaged and shipped off like distance delivery."

A final area of interest among faculty interviewed was a feeling that the impact of LCE grants was too narrowly defined by looking for direct impact and adoption decisions only. While it was acknowledged that these faculty and their classes were a primary target, they should not be viewed as the only way LCE grants impact campus culture. One professional development director said it well by indicating that, "I feel strongly about the cadre of people around whom there is a conversation on teaching; but there is a second ring of people not directly involved but impacted by this conversation. So the foot print is bigger than the grantee base. Second tier effects also include spreading learning from the course funded in the grant to all other courses taught by the instructor, and across the instructor's career."

## Promising Developments/Exemplars

Many hours of interview data and document review reflected what was perceived to be exemplary examples of learner-centered principles applied in innovative ways. As noted earlier, the grants were

often a source of support for ideas that existed prior to the announcement of the competitive grant programs, but equally often the proposal provided an opportunity for real experimentation. Promising or exemplary features noted during this brief review of the learner-centered grant program included recognition of expanded faculty conversations about teaching and learning, invigorating new linkages developed across disciplinary and campus boundaries, and young faculty careers enhanced by the momentum of successful grantsmanship. These desirable outcomes have unknown impact beyond those directly involved, but for the funded cadre of faculty and those who participated in grant-funded activities there were many rewards.

The range of exemplars include a Communication Assessment & Learning Lab at ASU West that has leveraged initial funding from an LCE grant to produce a campus asset that now receives university

funding and has managed to attract outside investment in the form of contracts with state and corporate entities. This lab provides an opportunity for student mentors to work with other students facing public speaking, professional interview, classroom assignment and other communication occasions. This example of leveraging grant funds provides an exemplar of one desirable outcome of the LCE Grant Program.

Another example of successful leveraging of LCE grant funds is reflected in the swirl of follow-on activities growing out of the tri-university grant awarded to the writing programs of the three universities. Building upon the momentum established as faculty from each of the campuses convened to compare outcomes and philosophies, the group developed a common rubric for reviewing student papers and inspired an examination of the link between campus philosophy and the support role the programs play across the curriculum. The grant funded an opportunity for the group to review between 700 and 1,000 writing portfolios from first year composition students. As one example of the follow-on activity, the UA Writing Program took the initial grant funded activity and extended the analysis to include a follow-up content analysis of what people were talking about at each of the discussion tables during the grant funded retreat. Later an analysis of the high performing and low performing portfolios provided an opportunity to identify what defines these levels of performance. The analysis further revealed what instructors value in the review of papers along with the areas where students are having challenges. This analysis was followed by focus groups with teaching assistants and instructors, a group including over 160 teachers, who directly impact 12,000 students annually. "Writing makes learning visible in the classroom, it also make learning visible in the institution" so this investment in focusing upon how students were doing and how the program might have more impact, suggests tremendous reach from a relatively small financial investment

Focusing upon the faculty professional development priorities of learner-centered education and melding that with a need to help faculty develop assessment expertise, the Science Learning Center at NAU leveraged its LCE grant to move beyond working with faculty on revising their syllabi to make courses more learner-centered, to a follow-on set of workshops that coached them on developing assessment strategies that would articulate with the new learning outcomes and course strategies. This work is groundbreaking in higher education and has attracted requests and contracts for the services offered by the center from other states.

Across the system these stories abound, bring exposure and influence to the learner-centered initiative, and address the core values promoted in Regent discussions leading up to the creation of the LCE Grant Program.

## Summary Observations

The power of evaluation to reveal critical insights into the functioning of programs comes from the way the program has been designed more than the way the evaluation has been conducted. At its best, evaluation provides a mirror that produces a sharp clear image of what the program has become, juxtaposed against the promises that were originally made. Beyond reflecting program reality versus promise, evaluation can provide only a composite view of the impressions, opinions, beliefs, and aspirations of those who are stakeholders in the evaluand. It is easy to have expectations that exceed the power of evaluation to deliver, and tempting to push conclusions beyond the data that has been collected, analyzed and reported. For these reasons, this evaluation has been continually guided by three basic questions and interviews, document reviews, and other data gathering activities have been tightly wedded to these questions. These questions are again used to provide structure to the summary comments offered.

## *How well does the LCE grant program match the priorities for the Regents Innovation fund?*

The Regents Innovation Fund derives some key evaluation criteria from its funding source, Proposition 301. Funds from this special tax source are to focus on several areas of critical need for the state. The most relevant of these needs to the purposes of the Learner-Centered Education Grant Program is workforce development and access. One respondent said it well when asked about the fit, "LCE fits more on innovation to improve student access than workforce development...student access to learning." When considering innovation, the LCE initiative is no longer an emerging activity or innovation, however there is voluminous evidence of innovation in access to learning at the level of specific program and courses funded through the grant program. These efforts are emerging, experimental, and innovative.

Two summary observations emerge related to this evaluation question. First, among the most challenging issues facing higher education assessment of student learning outcomes figures prominently and perhaps competes for the title of most vexing challenge. Learner-centered education places assessment of student learning outcomes as a central element of instructional design, yet the projects funded through the LCE Grant Program have focused more on faculty development and curriculum modifications than this critical component of higher education transformation.

**Recommendation #5: Initiate a focused effort to raise the profile of student outcome assessment activities to emphasize where the grant program is innovative and a value-added to instructional programs.**

> **To enhance the innovative quality of the LCE Grant Program a fresh and invigorating approach to assessment is needed and would be widely supported by those interviewed. This seems to be a natural area for increased incentives within the funding priorities for grants. Whether adopted as a theme for one or two award cycles, advertised as a priority funding area, or developed as a special RFP for a tri-university collaborative project some expanded focus on assessment of learner outcomes seems critical to the future credibility of the learner-centered initiative.**

A second set of comments related to the fit of the grant program with the Regents Innovation Fund suggested ways to increase the impact of funds awarded to grantees. Project managers suggested that a small amount of funds be available to follow up on successful outcomes of grant awards. Administratively these funds could be handled in any number of ways, but several project directors expressed a wish that when they were really on to something, there was an opportunity to build upon the initial success of their efforts.

**Recommendation #6: Develop a fast-track option for expanding successful projects and those with promising innovations.**

> **A "fast track" approval process for extension of projects showing promise as a result of the initial funding would provide a low risk opportunity to increase the impact of the grant program. The additional funding would be used to either further analyze data collected through evaluation activities built into the original proposal or disseminate those findings when warranted.**

An important theme sounded by several project directors suggested another area of expansion for the LCE initiative in ways that further support the original ABOR discussions of LCE.  The theme is that of access to higher education opportunity.  Henry Levin[2] provides an excellent way to think about higher education access.  He argues that access has levels that are a useful way to gauge success in providing an opportunity for educational success.  Providing *physical access* to higher education is most basic, but when achieved *access to participation* is the next challenge, followed by *access to achievement* and ultimately *access to the consequences of achievement*.  Learner centered education holds promise to impact the middle two forms of access (participation and achievement).  This access analysis raises the issue of cultural foundations of student learning, an area touched upon by several funded projects and a growing area of concern for the University System.  Through the innovation in access to higher education theme, learner-centered education initiatives addressing cultural issues should be encouraged.  As one PI noted, "I think the cultural access needs more attention that is something we need to heighten the rhetoric around.  There is a disconnect between our discussion of LCE and our discussion about growing diversity, because with LCE we think about our current students, but the demographics remind us that we are not serving all of whom we must serve.  Can we become learner centered around the needs of students we are not yet serving but need to serve?"

**Recommendation #7:  Focus grant program priorities to recognize emerging educational issues facing the system, such as the implications of growing student diversity.**

> **Developing a set of learner-centered initiatives focused on the underlying educational issues heightened by the growing diversity of Arizona's potential student population would bridge the innovation in access and workforce development criteria of Proposition 301 funding, further centralizing the grant program as an important Regent initiative.**

The original discussion of learner-centered education focused the Regents on the issue of responding to the increased student diversity anticipated in the system.  Subsequent implementation of the grant program has resulted in some attention to this question but the future orientation originally envisioned has not developed.  Returning to a discussion that links future student learning needs and the grant program would provide an important boost to both central concerns.

## *Has the grant program met its intended purposes?*

There is considerable although not unanimous support for continuing the LCE Grant Program.  One of the key Regents involved in the development of the program offered the observation and recommendation that, the LCE Grant Program is "a very good idea, we worked hard to implement it, and it should be continued."  However even those who strongly encouraged program continuation, were open to and encouraging of possible modifications of the program in the future.  As another former Regent noted, "I think it should be continued it is one of the more important things we did.  But it is time to look at some next steps."

**Recommendation #8:  Develop an impact plan and goals tied to clear outcome expectations for the overall grant program.**

> **A first step in designing a future for the grant program is the specification of outcomes desired from the program.  If an impact plan were developed as part of the extension of the grant program, it would provide an opportunity to join together the overall goals for the initiative and the strategic selection of grant awardees.  With a goal and strategy for overall**

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[2] Levin, Henry.  1976. Equal Educational Opportunity in Western Europe: A Contradictory Relation.  Paper presented at the Annual Meeting of the American Political Science Association, (Chicago, Illinois) September 6, 1976.  ED 162 949

**impact, annual themes or selection priorities for grants could become a mechanism for directing resources towards the intended outcomes. Without an impact plan, proposal review rates the merits of the program ideas in a vacuum without a clear sense of the intended cumulative impact of the grant program.**

An impact plan would prepare the program for future questions of whether it has met its intended purposes, providing a clearer basis for future decisions.

## *Is there evidence that the funded projects have increased/improved the infusion of learner centered education into the universities' educational environment?*

Among the three evaluation questions, this item has the least compelling evidence. There is enormous evidence that learner-centered activities on the campuses have been positively impacted by the availability of the grants and that faculty conversations about learner-centered education have been impacted among faculty closely aligned with funded projects. What is missing is evidence that the projects have had impact beyond the narrow corridors of funded activities or that the impacts on involved faculty are sustained over time. An important way to better identify and improve this track record for the future is to create a stronger link between the grant program and campus priorities. The mechanism for this connection has been built into the design of the grants program through the composition of the LCE Team and LCE Advisory Committee yet it has not materialized in the eyes of many of these key liaisons. If the Provost can be viewed as the key figure in campus academic priority setting and recognition, their appointments to the Advisory Committee and their participation on the LCE Team must benefit more from the overlap. The opportunity already seems to exist.

**Recommendation #9: Through use of the existing grant program structure, examine the alignment between the grant program and campus funding priorities**

> **To increase the likelihood of sustainability and ongoing campus support for successful innovations, the link with campus planning priorities must be strengthened. To enhance this linkage the LCE Team should discuss whether the label of learner-centered inhibits thinking of the program as aligned with campus priorities and adjust the label accordingly. Additionally the team should consider using funding themes or priorities to create a stronger fit with campus priorities as the recent focus on entry level courses seems to have accomplished.**

A more visible and vigorous contribution to student outcome assessment discussions would be almost certain to create a better sense of alignment between grant program and campus priorities.

## Closing Comment

The recommendation options available to the LCE Team are numerous and hopefully the crafting of a recommendation will draw upon a number of sources for input. It would be wonderful if the evidence available could be fashioned into a compelling case for a particular course of action but in the absence of more definitive goals for the program a compelling case is beyond reach. A persuasive argument however can be developed using the professional judgment of those closest to the program. This evaluation has attempted to collate those professional judgments in a useful way. When added to summaries of funded projects, projections of students impacted and testimonials of faculty engagement this evaluation should help support the important deliberations that will occur. To do learner-centered education in Arizona requires more than supplying faculty with new tricks or tools to use in the classroom. It is as one respondent noted more about "changing people." The decision facing the LCE Team is to determine what is reasonable to expect from centralized encouragement of curricular transformation.

Once the desired goals are clearly defined, the views and experiences of those involved in the LCE grant program can be used to inform the discussion regarding how far the system has been able to come with the investment made to date.  Ultimately no strategy will have the power to change people, if it does not have the support from campus leadership necessary to make it an integral part of general campus direction.

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**ATTACHMENT 2**

EVALUATION OF THE ARIZONA BOARD OF REGENTS
LEARNER-CENTERED EDUCATION INITIATIVE

# LCE ADVISORY COUNCIL RESPONSE

**Approved by the LCE Team
May 10, 2006**

# EXECUTIVE SUMMARY

At the request of the LCE Team, the LCE Advisory Council developed this response to Dr Hall's report, which was accepted by the LCE Team on May 10, 2006, and approved for submission to the members of the Arizona Board of Regents.

The response that follows this executive summary is organized around the nine recommendations Dr. Hall provides in his report. Each recommendation is addressed individually, with one exception (Recommendations #2 and 9). However, a number of the recommendations in the evaluation are related and could be clustered into three general categories:

- Accountability
- Linking to institutional priorities
- Faculty support


## I.     Accountability.

The most common thread in the recommendations relates to accountability: setting reasonable goals, determining a baseline, defining expected outcomes for projects and for the program as a whole, and assessing those outcomes. (Recommendations #1, 2, 3, 8)

The advisory council strongly supports the recommendations related to accountability.

- As noted in the comments on Recommendation #8, the purpose of the grants was to infuse learner centered techniques into the institutions, one course at a time or through faculty development for a few faculty members at a time.
- There was no baseline or clearly defined goals to achieve.
- The advisory council acknowledges that in the future this is a desirable improvement.
- It is also acknowledged that it would be beneficial to seek professional assistance in formalizing the continuation of the grant program, i.e., establishing a baseline, developing a process that is driven by measurable outcomes towards a set of specific goals, and designing an RFP. The program would also benefit from external evaluation of individual grants and the program as a whole.


## II.     Linking to Institutional Priorities

The second key theme addresses connecting the grants program to the priorities of the institutions and emerging issues in higher education. (Recommendations #2, 7, 9)

The LCE Advisory Council strongly supports these recommendations.

The existing organization structure of the grants program could be strengthened to improve this link. For example, each provost has appointed a vice-provost to serve on the Advisory Council. These individuals could provide the input on institutional priorities as recommendations are developed regarding grant funding priorities. These recommendations would be developed for approval by the LCE Team, which includes the university provosts and regents.

## III.     Faculty Support

The last set of recommendations addresses ways faculty could be better supported through the grants.  (Recommendations #4, 5, 6)

- <u>Recommendation 4</u> relates to links between the grants and tenure.  Faculty comments on the grants were often tied to comments about the lack of acknowledgement for teaching.  While the Advisory Council believes that each university has mechanisms to address this, additional discussion with the university provosts may be warranted.

- <u>Recommendation 5</u> relates to a need for improving assessment of student learning outcomes within the universities.  The Advisory Council recommends utilizing faculty expertise within the institutions to either issue an RFP seeking a group of faculty develop ideas and information for use in the grants and to consider designating the development of innovative learning assessments as the focus for one or more grant cycles.

- <u>Recommendation 6</u> suggests a fast track for projects that either show promise or want to expand beyond the original project.  While there was not strong support for this recommendation, it raises an issue that has been encountered frequently: often the projects have taken longer to develop, implement and assess than the 18 months we have allotted.  Reassessing the appropriate length of grants, including options for multiple year projects, should be addressed for the future.

# EVALUATION OF THE ARIZONA BOARD OF REGENTS LEARNER-CENTERED EDUCATION INITIATIVE

# LCE ADVISORY COUNCIL RESPONSE

**BACKGROUND**

In February 2006, Dr. Melvin Hall presented the results of his evaluation of the Learner Centered Education Grant program to the LCE Team. At the request of the LCE Team, the LCE Advisory Council has reviewed the report and offers this response to the recommendations listed in the report.

The LCE Advisory Council strongly endorses the continuation of the LCE grant program or a similar grant program, incorporating recommendations from Dr. Hall's report. The council believes that the current grant program has been beneficial to faculty and students at the universities and has been a catalyst for increasing the focus on student learning. The experiences gathered from the first three years of the grants and the recommendations provided by Dr. Hall's evaluation should provide guidance for the future.

## RECOMMENDATION #1:
### Develop clear and measurable goals for the grant program.

RESPONSE

The members of the LCE Advisory Council agree that clear and measurable goals should be developed for the future grant project and that the expected impact on the universities should be defined. The program would be improved by establishing a set of specific criteria against which the success of the grants, specifically, and the program, in general, could be measured.

**Seek professional assistance for future planning**

1. The Advisory Council recommends contracting with a consultant to help develop the future Request for Proposals (RFP), to define clearer criteria for selecting those projects to be funded, and to establish baseline data against which to measure the outcomes.

2. Although the LCE Team would need to determine the actual goals of the grant initiative (what is realistic or desired, based on the funds available, etc.), a consultant could provide guidance in defining realistic goals.

COMMENTS

Although each LCE-funded project was required to set goals and establish measurable outcomes, there was no overarching set of system goals to tie the projects together and no baseline information against which outcomes could be measured.

*Because Recommendations #2 and #9 are closely related, our response and suggestions for moving forward have been combined.*

## RECOMMENDATION #2:

**Utilize campus appointees to grant program committees to increase synergy between grantees on each campus and across campus boundaries; enhance accountability measures both quantitatively and qualitatively.**

## RECOMMENDATION #9:

**Consider strategies for strengthening the link between the LCE program and campus funding priorities; revisit the use of "learner-centered education"; and explore the greater use of "themes" to structure grant proposals.**

RESPONSE

The Advisory Council agrees with these recommendations.  It acknowledges that increased communication and interaction among and between grantees, proposal reviewers, the LCE Advisory Council, and the ABOR LCE director and the LCE Team would enhance the program.  The Council also agrees that we should explore ways to focus the grant proposals to more closely mirror University needs and goals.

The Advisory Council believes that the LCE grant program is a valuable resource as it now stands, but that there are opportunities to strengthen it, expand its visibility and impact, and make greater contributions toward moving campus and university goals forward.  Toward that end, the Council recommends the following:

### Improve visibility of the grants and their outcomes

1. Provide support for grantees to present findings and improved strategies to other campuses.

2. Engage experienced grant proposal reviewers as well as successful grantees in advocating and "recruiting" participants for future rounds of grants.

3. Continue annual presentations to the Regents and invite Regents to events/classes which showcase LCE outcomes.

### Create stronger links between the grant priorities and the university needs and goals

The current committee structure of the grant program can support aligning the grants more closely with goals and initiatives of the universities.  The vice provosts who serve on the Advisory Council should have the responsibility of annually communicating campus priorities to the Council as themes or foci for the grants are developed.  The recommendations for these themes would then be approved by the LCE Team which includes the three university provosts along with Regents and faculty leadership.

### Other Considerations.

1. Reconsider the term "learner-centered education" as the most appropriate term for infusing student-learning activities throughout the universities; explore alternative titles.

2. Consider the feasibility of increasing the "match" or evidence of commitment at the college/department level to encourage greater awareness and impact of successful programs by more closely tying the proposals to unit goals/needs.

3. Consider establishing a "clearing house" or internal review panel that would certify or endorse that individual proposals were consistent with and related to specific university/campus needs and goals.

# RECOMMENDATION #3:
**Allocate funds to support stronger evaluation of funded projects and the learner-centered activities that they develop.**

RESPONSE

The Advisory Council agrees that there needs to be more systematic evaluation of grant projects to determine their effectiveness and impact. We recommend two strategies:

## Project Evaluation
Require every future grant to allocate a portion of the award for professional outcomes assessment, guided by general principles of assessment, adaptable for a variety of projects.

## Institutional Impact
Allot funds for a centrally managed process for professional services to conduct an outcomes assessment of the impact of the LCE grants, either by institution or systemically. The institutional/system assessment will only be successful, however, if clear and measurable goals are established, as described in Recommendation #1. Ideally, a consultant would be identified at the beginning of the grant cycle to be assessed.

# RECOMMENDATION #4:
**Develop links between learner-centered grant activity and faculty promotion and tenure processes.**

RESPONSE

The Advisory Council agrees that the design, implementation, and evaluation of the LCE grant activities is an important contribution to the work of the universities and that it should be recognized as valuable within a faculty member's review portfolio.

## Enhance Advisory Council-Provosts collaboration

1. Continuing collaboration between the Advisory Council and the university provosts can lead to the development of messages and strategies that will reinforce across all campuses the importance of recognition and rewards for teaching innovation and excellence.

2. Consequently, additional discussion with the provosts will be scheduled to pursue more robust approaches for linking faculty activities in teaching excellence to recognition within the promotion and tenure process.

# RECOMMENDATION #5:
**Initiate a focused effort to raise the profile of student-outcome-assessment activities to emphasize where the grant program is innovative and adds value to instructional programs.**

The Advisory Council supports this recommendation. A key element of learner-centered education includes defining what students are expected to learn and then developing methods for assessing that learning.

The following options should be considered as means of initiating greater focus on innovative students-outcome assessment activities:

**Engage assessment experts.**
Issue an RFP for faculty who are assessment experts to (a) compare instructional assessment methods and (b) work on innovative changes to help bring specific ideas into the system for assessments that  be used in the classroom.  The results could be published in a monograph that could be widely circulated throughout all three state universities to help units understand the best assessment methods that they could adopt in assessing student outcomes in their majors and minors.

**Require project assessments.**
Grant projects should continue to be required to conduct assessment using models provided through the monograph or by using other innovative assessment methods.

**Fund competitive assessment projects.**
Innovative projects for assessing learning outcomes could become a priority for one or more grant cycles

COMMENTS

From the outset of this grant program, a funding category has existed for projects that addressed assessment of student learning in a learner-centered environment.  Unfortunately, very few proposals were submitted in this category.  And yet, increasingly, one measure of institutional effectiveness is the extent to which institutions identify student learning outcomes for their programs and courses and have viable methods for assessing these outcomes.  For example, the North Central Association for Colleges and Universities, our regional accrediting agency, has redesigned the accreditation standards to increase the focus on outcomes and assessments of learning.  However, to many faculty, this is still a new endeavor and one for which many are not prepared.  The continuation of the grant program could improve faculty preparation in developing and assessing learning outcomes and improve institutional effectiveness.

# RECOMMENDATION #6:
### Develop a fast-track option for expanding successful projects and those with promising innovations.

RESPONSE

While the LCE Advisory Council recognizes the potential for "value added" through an approach that allows for extension of original projects that "show promise," a fast-track option would significantly change the original direction of the funding toward "pilot projects" and would, effectively, limit the amount of funding for pilots by holding in reserve an indefinite amount for extensions.  The nature of "pilots" was meant to encourage experimentation that would, in turn, receive ongoing support from the institution where the project showed promise, rather than from a central LCE pool.

**Options to address this recommendation.**
For the future, the LCE Team may need to consider other approaches to deepen the impact of the grant program.

1. Longer initial funding periods with larger overall budgets to accomplish assessment.

2. Expansion to test "scalability" of promising projects.

3. Dissemination of results before local funding is used to continue and/or expand initial successes. This implies that we fund fewer projects of a larger scale each year, which may be appropriate in the second phase of the LCE ABOR project funding.

The explanation offered by Dr. Hall for this recommendation takes us in yet another direction, namely toward enhancement of the access to higher education for a more diverse student population.  See recommendation #7 below.

# RECOMMENDATION #7:
**Focus grant program priorities to recognize emerging educational issues facing the system, such as the implications of growing student diversity.**

RESPONSE

The Advisory Council suggests that this recommendation be considered in the context of addressing alignment of the grants with our institutional priorities.

**Growing enrollments/decreasing resources.**
Greater numbers of students are expected to enroll in our universities in the near future, concurrent with decreasing resources (the "double whammy").  The early descriptions of the benefits of LCE approaches included strategies that would simultaneously improve both learning and cost effectiveness; however, this did not become of a focus of the grant program.  Given the current demands on the university system, pairing learning and cost effectiveness would likely match institutional priorities for the upcoming years

**Student diversity.**
While not formally addressed as part of the LCE grant initiative, one of the key purposes of the learner-centered approach is to increase the ability of faculty to address a diverse learning population.  Learner-centered education, by design, is supposed to be, and for all of the Arizona universities should be, focused on developing the different learning styles of students in ways that positively value and build on their diverse backgrounds.  This purpose should be tightly woven into the desired outcomes for the future grant initiative.

# RECOMMENDATION #8:
**Develop an impact plan and goals tied to clear outcome expectations for the overall grant program.**

RESPONSE

The Advisory Council agrees with the evaluator's observation that there is limited concrete documentation that the projects funded for the first five years have "increased/improved the infusion of learner centered education into the universities' educational environments."

**Options to address this recommendation.**

1. Consider strategies for soliciting and measuring projects that complement key institutional priorities and reach beyond the individual course level.  These changes should be based on clear agreement between the LCE Team and the LCE Advisory Council.  The vision for this next phase must be articulated before the mechanisms for funding can be designed.

2. Revise the request for proposals as well as the reporting requirements for the funded grants to reflect these changes.

COMMENTS

In the original grant program, such broad infusion and collective impact, as described in this recommendation, had not been articulated as a condition of individual grant proposals and awards.  Indeed, many of the projects targeted innovations and revisions within single courses or labs, or

addressed faculty development to facilitate infusion of LCE principles and strategies into the curriculum of those faculty. Projects designed for specific courses typically included measurements of student success, such as assignments completed, grades, self-report on concept development, etc. The measure of success for faculty development projects was usually documented by faculty participation and faculty reports on the value and usefulness of the experience. Often, revisions in course syllabi were a key measure of successful implementation of a faculty development project.

Significant anecdotal evidence exists to suggest that faculty participating in LCE grant projects shared their enthusiasm about successful strategies with colleagues, resulting in an impact beyond the level of the individual funded faculty member. The development of websites linked to particular projects and resources has been a particularly valuable dissemination strategy for reaching beyond a single unit to the full university system. But there is no measurement regarding the use of such sites, or the implementation of material contained within the sites.


May 2006

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**ATTACHMENT 3**

# Arizona Board of Regents
# LCE GRANTS ORGANIZATION

| ORGANIZATION | FUNCTIONS | 2006 MEMBERS |
|---|---|---|
| **LCE TEAM** | • Oversight for LCE<br>• Approves funding for grants<br>• Approves substantive changes to grant process/criteria | **2 Regents (Jewett, Graff)**<br>**3 Provosts (Davis, Glick, Grobsmith)**<br>**3 AFC members**<br>• Ernest Hirata, ASU<br>• Charles Connell, NAU<br>• Robert Mitchell, UA |
| **LCE GRANTS ADVISORY COUNCIL** | • Develops grant review process and reviews rubric<br>• Revises grant processes annually<br>• Reviews, revises RFP; recommends substantial changes to LCE Team<br>• Participates in grant review and serves as training coordinators for their campus | **Provost App**ointees<br>• Ruth Jones, ASU<br>• Susanna Maxwell, NAU<br>• Jerry Hogel, UA<br>*and*<br><br>**Three AFC Members**<br>• Robert Morris, ASU<br>• Charles Connell, NAU<br>• Jennifer Jenkins, UA |
| **GRANTS REVIEW PANEL**<br><br>Organized by University Based Teams | • Review and rank grants in teams<br>• Each team has a team leader<br>• Co-coordinators (LCE Advisory Council) for each campus provide training<br><br>*Selection Committee:*<br>Team leaders and training coordinators comprise the committee to select grants, based on team rankings, to recommend for funding to LCE Team, | **Team Composition**<br>• 1 Provost Appointee and 2 AFC appointees per team<br>• 1 student appt by each student gov't president.<br><br>**Fall 2006: 9 Teams: 3 per university.**<br><br>LCE Grants Program Director: Stephanie Jacobson, ABOR |

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ATTACHMENT 4

**Arizona State University**

**Themes for ABOR-LCE Grants**

**October 2005**

Arizona State University efforts under the LCE grants have been diverse.  Some of the funding has supported work by individual faculty making modifications on individual courses; others have encouraged projects for institution and system-wide faculty development in the area of learner-centered teaching strategies.

Student Responsibility

Several projects encouraged student engagement and responsibility for learning.  These involved both the development of hard skills, such as technology, among students as well as the refinement of communication skills, such as writing, with an aim to equip students with better strategies for learning, useful both in student experiences and in their professional lives or preparation for employment.  The Human Writing Event out of the Barrett Honors College offered honors student small group and individual tutoring experiences tailored to students' needs and writing objectives.  Engineering faculty developed learner-centered modules designed to present material to students in a logical and generic manner to enable students to solve design problems better, particularly in two gateway courses for entry into STEM majors.  Several projects added learner-centered modules and interactive experiences to large, first-year, and gateway classes with results of enhanced student learning outcomes and increased retention in the courses.  The Learning Communities project, focused on integrating general education courses in the first year, evolved into an advanced learning community, carrying students throughout much of their lower division work.

Professional Practice

Several projects aimed at creating or modifying student practice experiences to enhance the quality of professional practice upon graduation.  One teacher preparation effort linked student teachers' classroom activities to leadership development.   Another teacher-preparation project worked with students to enhance professional writing and to create classroom modules for young writers.   Several projects provided additional faculty development resources, including a web—based assessment toolbox. Modification of a collaborative master's level social work program was designed to prepare Native Americans for work on their reservations.  Another project worked on adapting materials for disabled students.

## ATTACHMENT 4

Research on and Assessment of LCE

While all projects focused to some degree on classroom-level research and each assessed the impact, some took a comprehensive approach in addressing a broad-based, system-wide issue.  Both the tri-university project among the writing programs and the tri-university faculty development grants sought to align better institutional-level expectations of student and faculty activities.  These efforts were particularly effective in their domino effects.  The faculty, and students, in these large projects had notable secondary impact on home departments and colleges.  Another project evaluated the difference in learning outcomes for students in traditional, hybrid, and on-line courses.  A project out of psychology focused on increasing critical thinking skills among students as well as providing faculty with additional materials to teach critical thinking.  The large general studies project studied learning communities vis-à-vis student retention and learning outcomes.

Overall, the 27 grants awarded to Arizona State University have increased learner-centered practice and stimulated the production of research on the scholarship of teaching and learning.  The faculty are more literate in the vocabulary of learner-centered practice, and a significant number of students have been impacted by faculty and peer efforts.

# ARIZONA STATE UNIVERSITY

## SYNOPSIS OF LCE FUNDED PROJECTS – 2002, 2003, 2004

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
|---|---|---|---|---|---|---|
| **2002** | | | | | | |
| **HELPING EVERY TEACHER REACH LEP STUDENTS** *Billie Enz* *Associate Director* *College of Education/ Curriculum and Instruction* | $25,000 | To seek ways to dramatically expand the ability to offer the English as a Second Language endorsement program to teachers in Maricopa County. | Developed web-support instructional modules for the six courses that comprise the College of Education's English as a Second Language program. | 6 courses and the number of classroom teachers affected by this project has increased from 40 to 120-200 students. | Modules with plans, activities, and assessments and support materials provided; additional teachers and schools able to provide ELL support. | The classroom teachers are learning ELL strategies to help children learn more effectively in Arizona classrooms. |
| **ENHANCING LEARNING IN FIRST-YEAR BIOLOGY COURSES THROUGH THE USE OF CLASSROOM TECHNOLOGIES** *Alison Whitnmer* *CLAS/Biology* | $25,000 | To examine patterns of technology use in the introductory biology series and to amend problems typically associated with large lecture courses. | We surveyed students on their computer use habits, experience with computer media, confidence in abilities to use technology, and attitudes towards technology in their lives and careers. | 2 courses involved. 1600 students affected. | Information from student surveys shows very little difference between how men and women answer questions, between pre and post semester responses, or between Biology 187 and Biology 188 feedback. | Surveys showed that instructors believed that students are capable of working successfully with technology but that they need additional training with spreadsheet and statistical programs and help to fully use the power of the Internet to gather information. Student feedback suggested that Thinkwell is best used as a supplemental resource rather than the primary learning resource, and our |

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
|---|---|---|---|---|---|---|
| | | | | | | faculty feedback occurred. |
| **HUMAN EVENT WRITING CENTER** *Jacquelyn Lynch* *Barrett Honors College* | $15,000 | To develop, equip, and staff a learner-centered approach to helping students improve their critical thinking and writing skills. | BHC faculty and the HEWC peer tutors worked together to provide Human Event students with tutoring sessions tailored to the students' individual writing objectives and needs. | 2 courses involved. 1243 students affected. | Evaluations and exit interviews showed that students from both groups developed new skills and self-confidence following consistent work with HEWC tutors. | A more objective evaluation vehicle that would assess incoming and outgoing writing skills may help beginning students comprehend how their incoming writing skills measure up to Human Event writing standards, so that they can approach HEWC tutoring with a stronger sense of their initial strengths and weaknesses. |
| **LEARNER-CENTERED COMMUNITIES: USING INSTRUCTIONAL TEAMS TO CREATE CUSTOMIZED LEARNING ENVIRONMENTS FOR FIRST-YEAR STUDENTS** *Vincent Waldron* *Collaborative Programs* *West Campus* | $25,000 | To support curriculum innovation and faculty-staff development for the learner-centered communities developed for our inaugural class of first-year students. | Each community was structured around two thematically linked courses and a 1-credit University Success Seminar. | Number of faculty and staff teaching in learning communities or qualitative and quantitative student evaluation data. | Increased retention and indication of increased learning. Increased faculty satisfaction with LC experience. | Division of Collaborative Programs continues effort. |
| **DEVELOPING AND PROMOTING LEARNER-CENTERED** | $49,691 | To develop learner centered modules for use in precalculus and beginning | Four faculty and two graduate students involved in developing 10 | Views About Mathematics Survey, interviews, | The implementation of the ten research-designed and developed curricular | Additional funding sought. |

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
|---|---|---|---|---|---|---|
| **INSTRUCTION THROUGH SCIENCE AND ENGINEERING BASED PROJECTS IN PRE-CALCULUS AND INTRODUCTORY CALCULUS** *Marilyn Carlson* *CRESMET* | | calculus, two large enrollment undergraduate courses. The modules will provide instructional support materials for teachers, problem-based activities for in-class group work, and take-home team design projects to promote students' further exploration and mathematical analysis of a problematic situation. | learner centered STEM integrated modules, 5 for use in precalculus and 5 for use in beginning calculus. | classrooms assessments. | modules are expected to result in dramatic shifts in the problem solving behaviors, scientific methods, and conceptual understandings for all students in two large enrollment courses. | |
| **2003** | | | | | | |
| **AN ONLINE PROFESSIONAL DEVELOPMENT PROGRAM FOR PROBLEM-BASED INSTRUCTION** *Barry Leshowitz* | $25,687 | To develop a web-based, distance-learning program of faculty development that will enable teachers across the curriculum to create and implement problem-based instruction (PBL) in their classrooms. | The online, synchronous (live) version of the workshop was presented in a weeklong event in the summer of 2003. The principal and co-principal investigators met online on the workshop's Web site with a diverse group of about 15 ASU and local community-college faculty. | Two studies were conducted to assess quantitatively the program in problem-based learning. The first study in problem-based learning used an exercise developed for this evaluation; the second study used a survey instrument based on the National Survey of | Developed, demonstrated and evaluated an online faculty development program in PBL for presentation in either a live, or self-paced formats; prepared an information packet that allows instructors to conceptualize their own approaches to integrating various elements of PBL with their lessons. Developed a hands-on module that enables instructors to assess | Evaluations of these workshops revealed strong support for the PBL model of instruction in the college classroom. |

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
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| | | | | Student Engagement. | the effectiveness of their problem-based instruction. | |
| **CONNECTING DISABLE STUDENTS WITH ARIZONA'S LANDSCAPES THROUGH GEOGRAPHY LCE EDUCATION** <br><br> *Ronald Dorn* <br><br> *CLAS/ Geography* | $15,488 | This LCE course modification uses field modules that shift intellectual ownership of the course performance objectives to the students. | 2 courses involved. 25 students in the Fall of 2003 and 210 in the Spring of 2004, with a expansion to 525 in the Fall of 2005 when the virtual field experience is made available to all introductory physical geography students. | Statistical analyses of pre-test and post-test results involved compared students who learn only virtually with those who learned only in the field. | The goals for the project are all met. The college course modules are complete and were tested. The most significant outcome that occurred through the project was that physically disabled students are able to participate in learner-centered field experiences. | A rigorous controlled research design reveals that student learning on a properly designed virtual field trip is very similar to learning by students in a real field setting. |
| **DEVELOPMENT OF LEARNER-FOCUSED DESIGN PROJECT MODULES FOR THE FRESHMAN COURSE ECE 100** <br><br> *Robert Hinks* <br><br> *School of Engineering/ Civil and Environmental Engineering* | $25,000 | To develop and distribute to ECE100 course instructors a collection of eight realistic and modern design project exercises taken from many areas of the engineering professions, and to present these exercises in a way that emphasizes the generic "engineering design process" and which requires students to take the initiative in determining their solution. | 3 sections of ECE100 involved and 120 students affected. | Students' survey. | Outcomes were significant in the manner in which students were receptive to an innovative format of learning important new material and the creation of a template for further development of this approach in this and other learner-centered applications. | Design of a very significant learner centered web-based educational tool focusing on possibly the most important aspect of the engineering profession that new students need to know, and which has not always been a clearly presented part of the ECE100 course in the past. |

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| **HELPING TEACHERS MOVE INTO LEARNER-CENTERED DIGITAL CLASSROOMS AT ARIZONA STATE: THE ATHENA PROJECT**<br><br>*Robert Binkley*<br><br>*CLAS/ English* | $24,302 | To help teachers in the Writing Programs to make the leap from a traditional classroom to digital classrooms utilizing techniques that focus on learner-centered pedagogy. | 118 sections with 2,072 students are being taught in one of the three formats: a computerized classroom, hybrids (1-day online and 1-day in class), and totally online courses. | First by working on syllabi for courses during the workshops; second, each participant wrote and turned in a teacher portfolio which demonstrated their expertise in digital instruction. | Faculty participants demonstrated a clear use of learner-centered techniques as applied to teaching in a computer classroom; faculty participants will teach courses that use more learner-centered computerized strategies; faculty will establish and use networks. | The Athena Project upgraded and enhanced 12 teachers' skills to a more learner-centered pedagogy. |
| **LEARNING CENTERED IN SERVICE: AN ASU/PUHSD PARTNERSHIP AND ACADEMIC COMMUNITY ENGAGEMENT SERVICES FIELD PLACEMENT INITIATIVE**<br><br>*Janice Kelley*<br><br>*DUAS* | $8,007 | To support fifteen Doran Community Scholars each spring as they engage in student-directed community research and service with thirty junior high students. | 2 courses involved; 30 ASU and 35 community students impacted. | Performance evaluations by instructor and on-site supervisors. | The ASU students' demonstrated understanding of joint inquiry and team work strategies, as well as their skills in carrying out to completion learner-directed research activities and projects. | Created a learning community that played a role in the retention of ASU students. |
| **WRITING IN THE PROFESSION: LCE CROSS-PROGRAM PROJECT**<br><br>*Janel White-Taylor*<br><br>*CLTE* | $40,835 | To create electronically enhanced writing tutorials that support the development of students' professional writing. | Collaboration with teams to review project progress; cross-discipline technology and writing content work teams utilized; workshops held for students focusing on | Assessment of writing skills; student reports. | All students that were assigned to the tutorial completed the tutorial and passed all tutorial tests. | Tutorials were revised to provide tracking to students rather than just summative. |

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| | | | professional writing and application to the classroom. | | | |
| **REDESIGNING GENERAL STUDIES: LEARNER-CENTERED COMMUNITIES FOR FRESHMEN**<br><br>*Dan Bivona*<br><br>*CLAS* | $50,000 | To redesign General Studies curriculum into 12-credit clusters and 6-credit linked courses as well as a 3-credit integrative seminar, which will serve as learner-centered communities for freshmen. | Three theme-centered learning communities were created and offered to incoming freshmen; all learning communities had a librarian-consultant; 111 incoming freshmen were recruited; cluster courses were taken in an integrated curriculum in the Tempe Learning Communities. | Pre-semester survey for the CLAS Learning Community Clusters; writing assessment, focus groups survey and retention study at ASU Tempe; ASU Polytechnic Assessment. | Significant improvements in all areas. | Integrated, theme-based learning communities create a significant opportunity for students to participate actively in general education. |
| **COMMUNICATION ASSESSMENT LAB: A LEARNER CENTERED APPROACH TO SPEECH COMMUNICATION**<br><br>*Lesley Dimare and Vincent Waldron* | $24,872 | To provide services and/or support for oral communication activities in students' course work at college or university. | 8 courses involved; approximately 360 students utilized the lab along with 7 mentors who administered training. | Feedback provided by students and professors. | CALL was an overwhelming success which provided outstanding training for students, and an exciting teaching opportunity for student mentors, and a potential to work with external organizations that require training in the area of public speaking. | The student-mentor relationship created the opportunity for students to speak ethically and confidently in a public setting. |

**2004**

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
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| **INDIGENOUS GEOLOGY: DEVELOPMENT AND ASSESSMENT OF A CULTURALLY-RESONANT, PLACE-BASED MODEL OF GEOLOGY EDUCATION FOR AMERICAN INDIAN PRE-SERVICE TEACHERS** <br><br> *Steven Semken* <br><br> *Department of Geological Sciences* | $25,000 | To enhance its relevance and interest to American Indian students in Arizona, principally pre-service teachers. | The course was piloted at ASU in fall 2005 ("GLG101sw") with an experimental group of 31 student volunteers of diverse ethnicity. | Pre- and post-surveys of sense of place, content knowledge, and attitudes toward science were administered, with a near 100% response rate. | The qualitative summative assessments by students were strongly positive. | The course materials will also be integrated into a more advanced course for in-service secondary science teachers now under development as part of the Project Pathways Math-Science Partnership at CRESMET. This course will be made available to in-service teachers at partnering school districts. |
| **ASSESSING AND EVALUATING LEARNING OUTCOMES IN TRADITIONAL, HYBRID, AND ON-LINE FIRST YEAR COMPOSITION COURSES** <br><br> *Dr. Patricia Webb* | $24,999 | To assess and evaluate student success rates in traditional, hybrid, and online courses at ASU. | Used several assessment instruments to collect data that will be used to compare the effectiveness of face-to-face courses, hybrid courses, and online courses in meeting student-centered outcomes. | Survey of student reflection; instruction evaluation of student learning outcomes in both environments. | Students dissatisfied with technology support for on-line activities and with lack of peer and faculty interaction in hybrids and online environments. | The project will result in usable products that help not only Arizona State University's writing Program, but also other writing programs across the state and country. |

# Themes in the Learner-Centered Education Grants
# Northern Arizona University
# 2002-2005

Northern Arizona University is integrating learner-centered education principles and practices through twenty-five grants received over a four year period. Six of these grants involve partnerships with either one or both of the other state institutions.

Overall Theme: Overall, the twenty-five grants express the significance of engaging students actively in their own learning. In three grants this is accomplished in more indirect ways than in the majority of grants: through development of evaluation rubrics that more clearly communicate expectations to students, a comparison of learner outcomes and student experiences in web and traditional courses, and through the initiation of a LCE web resource for part-time faculty. The overarching theme rests on the work of scholars in the field of LCE, that engaging students actively in their learning strengthens that learning and deepens its consequences. The grants approach this overarching theme through a variety of approaches. These approaches, or themes, provide a lens through which to view the work of the faculty involved with the LCE grants.

Simulations/projects engage students in applying what they are learning. A number of projects are aimed at providing students opportunities to explore and test out what they are learning through real-life settings. Many of these projects use technology to bring students out of the classroom and into the professional world: a simulated school where students interact on the web through a series of complex problems, a constellation of technology resources involving students in the archeology of the Colorado Plateau and grand Canyon, a video streaming project where students face curriculum development tasks in the face of simulated pressures and constraints.

Learning lab experiences engage students in extending and reinforcing what they are learning in class. A number of projects immerse students in laboratory experiences purposefully linked to in-class content. these settings, students are provided with targeted activities that serve as stepping stones to increased proficiency in the course objectives: a history learning lab where grad students mentor undergrads, a genetics lab course where students actively discover elements leading to original research, in a structured apprenticeship program for doctoral students in Applied Linguistics.

Classroom research, both by students and faculty provides insights and support for student engagement. A number of projects involve students and faculty in meaningful research to link student experiences with new materials under study. In these settings, students are involved in active problem solving that builds from observations to problems to research: a research project based on observations of microorganisms (supported by lab manual and web enhancements), development of research community among students in a computer science class in collaboration with ecological science, action research undertaken by faculty implementing LCE into their science classrooms (in multiple ways), a research project looking at student expectations and outcomes in web-based and traditional classrooms, training of current K-12 teachers to become ethnographers in their own classrooms so they can undertake classroom-based research to inform their own teaching.

Discovery based classroom activities engage students in understanding themselves as learners and the content of what they are studying. A number of projects integrate student active learning into their classroom instruction. In these settings, students have lectures augmented by classroom activity that engages them with both content and their own learning: the integration of learning centers that demand student choice making in an education class, the development of software modules and supporting web materials in a digital logic class, a tri-university project aimed at development class based LCE activities in geography education.

Technological classroom support resources engage students in individual active learning. A number of projects specifically used technology to involve students in supportive activities that would enhance their in class learning: an online homework system in math which was problem-based so students could apply the principles of their work in class follow-up and class preparation, an interactive archeology curriculum, an interactive simulated school, a virtual electronic learning space for ecological education.

<u>Cadres of faculty working on integrating LCE principles and practices into their courses provides a specialized learning community to enhance the work of individual faculty involved</u>. A number of projects involve more than a single faculty member and a single course. I n these settings, there is general training in LCE principles/practices and then an ongoing network of support is built as the faculty implement LCE projects in their own classrooms: three large tri-university projects involved 30+ faculty in implementation of LCE practices in their courses, a multi-faculty (cross departmental) project in the sciences involved faculty teams on improvement of student achievement, a cadre of 25 faculty teaching freshman undertook individual projects aimed at strengthening student achievement and retention.

<u>Student retention can be positively effected by integration of LCE principles</u>. A few projects specifically target the retention of students in classes with high drop out rates. In these settings, the projects seek to implement specific LCE practices to engage students directly in developmental work: in class curricular experiences in a pre-health profession major set to improve students skills and enhance their self-efficacy, in a collection of large freshman courses where faculty work on projects such as increasing meaningful class discussion, in web-based online homework in calculus course sequence, and implicitly in the development of a "collaborative, portable, learning-centered" masters of social work degree program to support a cohort of students preparing to work in rural settings.

Possible Studies for in-depth analysis:
- Julie Gess-Newsome: Faculty Increasing Student Achievement Success (Faculty from the sciences doing LCE based practices and research of them in classes).
- Gretchen McAllister: Sim-School (Development of a simulated school for use in education classes).
- Janet McShane: online web-systems for homework in mathematics classes.
- Eck Doerry: Virtual Electronic Learning Space (computer & ecological science)
- Gypsy Denzine: increasing learner centered education among part-time faculty members

# NORTHERN ARIZONA UNIVERSITY

## SYNOPSIS OF LCE FUNDED PROJECTS – 2002, 2003, 2004

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
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| **2002** | | | | | | |
| **CULTURE, CHILDHOOD AND CLASSROOMS: SUPPORTING NATIVE AMERICAN TEACHERS IN RESEARCH ON THEIR OWN PRACTICE**<br><br>*Dr. MaryJane Blasi*<br><br>*Asst. Professor* | $24,960 | Foster and support a first generation of teacher researchers in Native American reservation schools to create more relevant learner-centered environments for native and non-native children and to improve teacher practice. | Creation of a program to recruit, train, and support teacher researchers. | A Summer Institute was promoted, developed and implemented. Two graduate-level courses, "Social and Cultural Constructions of Childhood" and the "Ethnography of Childhood," were developed as part of the institute.<br><br>A self-assessment tool was developed to document changes in participants' beliefs and experiences with children.<br><br>Six teachers and their respective students in their home schools were impacted. | Participants reframed their beliefs about children and childhood to include cultural and social contexts.<br><br>Participants developed ethnographic research skills in order to conduct research in their own classrooms.<br><br>Teachers used newly acquired knowledge of the social construction of childhood and ethnographic research tools to inform their teaching practices. | Children in participants' classrooms benefited from more responsive teaching practices, more relevant, learner-centered environments, and improved teacher practice. |

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| **PATHWAYS TO EXCELLENCE**<br><br>*J'Anne Ellsworth*<br><br>*Associate Professor* | $19,408 | To create a student-centered learning environment model for education majors to enable them to better recognize and meet the special needs of diverse learners. | Using a series of modules and activities that promoted a learner focused experience, learning centers were developed that allowed students to select the way that they learned and to prove competence in each of the course objectives. Modules were developed based on questionnaires and large focus group sessions and allowed students to choose from four different learning/teaching styles. Skills were infused in the course content and curriculum. | A student handbook and course packet was developed to support the student move from recognizing objectives and how to meet them to developing and implementing self evaluations and proof of meeting course outcomes. Evaluation of five teaching models was added to the course and used to address individual students' philosophies about content and student/teacher roles. Formative evaluations and rubrics were initiated and strengthened through the course, resulting in demonstrations of specific goals and objectives in the class.<br><br>Between 350 and 500 NAU education students were impacted in the first year. | Students developed over 100 learner-centered project packets.<br><br>Students exhibited the development of process skills and an increased range of teaching skills as they expanded on their roles as teachers.<br><br>High percentage of passing grades on test based on AEPA standards of instruction.<br><br>Student feedback each semester builds upon the existing course. More robust tools, such as improved rubrics, are added for successive classes of students.<br><br>Additional faculty introduced to concepts practiced in this course are now utilizing many components in their own courses. | Improvement in student morale as disciplinary issues decreased.<br><br>Increased student attendance and interest in special education. |

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| **FACULTY INCREASING STUDENT ACHIEVEMENT SUCCESS**<br><br>*Julie Gess-Newsome*<br><br>*Director, SMLC* | $50,000 | Improvement of student achievement through learner-centered instructional and support efforts in high DFW courses. | Using an action research model, departmental faculty teams determined and assessed the reasons behind low levels of student achievement, retention, and success and implemented and assessed course-based intervention strategies. | During the 2002-3 academic year, 26 faculty across 8 departments and 18 courses worked to improve the success of students in their classes by addressing DFW rates, attendance, grades, and/or test scores.  Over 7,000 students were impacted in the first year alone. | Objectives and success varied according to project but included:<br><br>- Decreased DFW rates: accounting experienced "very low rates," economics dropped from 29.5% to14.75%, geology dropped from previous rates of 16-22% to 13%, sections of mathematics and statistics experienced a 3-19% decrease.<br><br>- Improvement in test, assignment and overall grades: chemistry experienced an increase in A & B grades and a 10% improvement in a nationally normalized organic chemistry exam, the number of As increased from 36% to 58% in computer information systems, students in the experimental sections of economics scored "significantly higher" on common items in the mid-term exam.<br><br> - Improved | Incidental Faculty Accomplishments<br><br>- Dr. Craig Bain, College of Business Administration, was awarded the American Society of CPAs Excellence in Teaching Award for 2002, being only the second recipient to be honored with this award from NAU.  The review panel was very impressed with NAU's and the Accounting Department's efforts through the FISAS project.  Dr. Bain also submitted a grant proposal based on his work in the FISAS project.<br><br>- Dr. David Elliot, Department of Geology, was honored recipient of the NAU Teacher of the Year-Sciences, and the College of Arts and Sciences Distinguished Professor of the Year – Sciences.<br><br>- Jeff Rushall, Dr. Brian Beaudrie, Patricia Anderson, Hiram Beltan-Sanchez, and Amy Rushall presented the results of their FISAS project at the Southwester Section of the Mathematical Association |

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| | | | | | attendance. A correlation between attendance and final course grades was noted in several subject areas including physics and astronomy, computer information systems, and accounting. | of America meeting at New Mexico Tech in Socorro, NM.<br><br>- As an outgrowth of their FISAS project, David Ostergern, Diana Anderson, Michael Ort, Paul Rowland, and Julie Gess-Newsome were previous recipients of a grant from SENCER - Science Education for New Civic Engagements and Responsibilities, a program sponsored by the National Science Foundation. Members of the group also applied for and NSF grant to extend their work.<br><br>- Drs. Pin Ng and Jim Pinto have developed their report for the FISAS project into a paper submitted to the *Journal of Statistics in Education*. |
| **INTERACTIVE ARCHAEOLOGY OF THE GRAND CANYON AND COLORADO PLATEAU: LEARNER-CENTERED EDUCATION IN THE ARCHAEOLOGY** | $16,957 | To develop a learner-centered module to increase student understanding of prehistory of the Colorado Plateau and the Grand Canyon and to improve student skills in science, | The primary activity of this project was the development of an educational, interactive, multimedia CD-ROM and web site focusing on the archeology of the Grand Canyon and Colorado | The CD-ROM and web site were successfully created and implemented. Results of a student survey which measured student opinions on lesson mechanics as well as impact on student learning have been | A majority of students reported:<br><br>Increased identification with Grand Canyon and Colorado Plateau cultures. (76%)<br><br>Deepened understanding of prehistoric past and lives of prehistoric | CD is to be published, thereby increasing the impact of this project. |

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| **CURRICULUM** *George Gumerman IV* *Assoc. Professor* | | math, and technology. | Plateau. | positive. Overall learning outcomes, skills, and multicultural understanding improved. The CD-ROM was utilized by 140 students the first semester. | people. (76%/74% respectively) New ability to identify environmental aspects of the Colorado Plateau (76%) Increased overall understanding of the archeology of the Grand Canyon (82%) Developed understanding of scientific inquiry (76%) Increased technological skills (58%) Half of students reported an increase in mathematic skills | |
| **SIM-SCHOOL: A LEARNER CENTERED SIMULATION** *Gretchen McAllister* *Asst. Professor* | $24,780 | To modify curriculum courses for pre-service teachers to include a simulated school experience using a web-enhanced curriculum to allowed students to develop their teaching, thinking skills, and knowledge of schools in a realistic and versatile simulation that | The principal component of this project was the creation of a simulated school that is interactive on the web, in order to build a learner-centered environment that allows the pre-service teacher to experience some of the pressures, constraints, and systems of support that can influence | An interactive K-12 simulated school site has been developed and piloted. It includes real-world applications of assignments and coursework. Syllabi and curriculum were adjusted to use the simulation as the framework for the course. Three courses utilized the simulation, impacting 400 preservice | Every student in the secondary and elementary classes involved in the simulation organized a course for effective learning. Students display competence and confidence in job seeking skills. Students' cooperative skills increased and they have used these skills in their | Increased student motivation and interaction has been observed. Student feedback has led to further development and improvement of the simulation. |

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| | | approximates life in an actual classroom. | curriculum construction and delivery. | teachers.<br><br>A quantitative instrument was used to measure teacher efficacy. Two out of the four efficacy factors reflect significant increases: there was an increase in disciplinary efficacy and increase in efficacy to create positive school climate. | permanent positions as teachers.<br><br>Qualitative analysis reveals that students feel more confident and prepared to enter student teaching after engaging with the simulation. In addition, they reported that they feel more engaged in the content of the courses because they are continuously applying the theories and course information to their simulated school.<br><br>Preservice teachers are more aware of the complexities of teaching in today's classrooms. | |
| **STUDENT ACHIEVEMENT AND LEARNING EXPERIENCES IN WEB-BASED VS. TRADITIONAL UNIVERSITY COURSES**<br><br>*Karen Puglieski*<br><br>*Chair and Professor* | $22,720 | To investigate student achievement and experiences in traditional versus web-based university level courses that utilize different sets of learner centered pedagogical strategies. | Student learning and experiences were assessed in two pairs of sociology courses (Social Psychology and Environment & Society), one taught in traditional, face-to-face format, and the other in a web-based format. All course sections were taught during the Fall 2002 semester and the | Analyses of the data collected through the three strategies focus on comparing learning and student experiences across modes of instruction.<br><br>Pre/post surveys, essay assignments conducted in all course sections.<br><br>Survey data was coded and primary | Analyses reveal suggestive patterns concerning how fit of learning objectives and mode of instruction affect student experiences and student achievement.<br><br>This project resulted in four theoretical conclusions:<br><br>1. Communicative interaction in the two | Comparisons of two courses in each modality is a good beginning; however, it is not enough to offer any distinguishable patterns, but to only suggest areas that must be explored when assessing student learning over the web versus face-to-face. Furthermore, it is believed that there may be problems with strict comparisons of the two |

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| | | | same instructor taught each pair of courses. A triangulated strategy involving self-administered surveys, analysis of written assignments, and qualitative interviews was employed in the investigation. | analyses completed. Student essays were coded and analyzed. Qualitative interviews were conducted with a sub-sample of students. Qualitative interviews were transcribed and analyzed. | modes of instruction are distinct 2. While researchers of assessment and student learning may aim to control for participants' feelings or "reactive effects," these can often be the very features that produce learner engagement and integration. 3. Critical thinking assumes a spirit of inquiry that can be encouraged on the web, but more effectively integrated into the classroom. 4. In the course of this research, particularly the data on the benefits and drawbacks of the two modes of instructions, it was concluded that student-centeredness can be primarily "individualistic" or "collective"—a difference that can itself be understood as culturally relative. Online courses should be understood as more individual-centered | modalities and that such comparisons may yield misleading conclusions on how and what students learn. |

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| | | | | | whereas face-to-face courses also involve more collective forms of student-centeredness. Determined focused recommendation for further research. | |
| **2003** | | | | | | |
| **IMPROVING RECRUITMENT AND RETENTION OF DISADVANTAGED STUDENTS THROUGH ENHANCED SUMMER PROGRAM** *William Johnson* *Assistant Director HCOP, Health Promotion, NAU* | $10,350 | Provide an enhanced curriculum for freshman and sophomore summer students from disadvantaged backgrounds. | Expand and enhance the Pre-health professions Education and Research Program (PREP). | Additional students participated in PREP: 27 recruited, 25 successfully completed the program (grade C or better). Thirteen PREP students participated in a mentoring activity for 40 high school students. New equipment and supplies allowed all students to participate in field work. Mentoring program created for high school students. Pre/post self-efficacy surveys were conducted. | A larger number of students was recruited and completed PREP than in the past. Students indicated improved self efficacy in 16 of 20 survey questions: Students increased their self-efficacy through the active involvement in assignments derived from cooperative learning principles and active learning. Students demonstrated greater confidence in their abilities in the majority of categories measuring self-efficacy. | All students continued in a health career track. |

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| **INCREASING LEARNER-CENTERED EDUCATION AMONG PART-TIME FACULTY**<br><br>*Gypsy Denzine*<br><br>*Associate Dean, College of Education, NAU* | $49,969 | To provide part-time and full-time faculty in the College of Education professional development and training activities in core courses utilizing learner-centered principles that include both active learning and learner-centered assessments | Development of a program to include training and mentoring for part-time faculty and the creation of a resource web site. | Eight full-time faculty participated in training and orientation to LCE principles.<br><br>Department chairs identified four core classes to be part of the program.<br><br>Forty part-time faculty participated in the program, which included a full day workshop and formal mentoring. Approximately 55-60 courses and 150 students were affected the first year.<br><br>A web site was developed and utilized by full-time and part-time faculty to access information on LCE. There were 447 visits to the site over one semester. | The overall result was to raise faculty awareness of learner-centered principles and use of LC practices and to increase the number of learner centered environments across the state.<br><br>Connections were increased between full-time and part-time statewide faculty through the development of a mentoring program.<br><br>LCE principles were infused into existing degree programs and the quality of teaching was improved statewide.<br><br>Part-time faculty gained valuable skills to be better able conduct student outcome assessment.<br><br>Several faculty developed teaching portfolio organized around LCE principles. | Observed improved quality of syllabi and of teaching through mentoring and training. |

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| **2004** | | | | | | |
| **THE VIRTUAL ENVIRONMENTAL LEARNING SPACE: PHASE II**<br><br>*Dr. Eck Doerry*<br><br>*Asst. Prof., Computer Sciences & MPCER, NAU* | $25,000 | Enhance ecological science at NAU by creating an engaging online learning environment that explores a novel integration of research and learning communities and promotes the development of interdisciplinary course content. | Creation of a Virtual Electronic Learning Space (VELS), an online system which brings together course curricular modules, data from ongoing ecological research projects, and "virtual explorations" of climate zones. | Five new labs/instructional modules were developed to support interactive VELS experimentation in three core natural science courses, impacting approximately 100 students the first semester.<br><br>VELS components were integrated into the online Southwest Ecological Research Forum (SERF), permitting students to inspect, analyze, and learn from current research projects.<br><br>Tools were developed to permit real-time uploading and viewing of data. | Three core science courses now include a virtual online laboratory. (Additional courses are likely to follow.)<br><br>Students have access to real research data and are able to compare their own field work to that of practicing scientists. Students are able to participate in the community of practicing scientists in a limited but realistic fashion. | The sharing of student data encouraged critical discussion in which students reflected on their data collection techniques. |
| **VIDEO BASED LEARNING MODULES**<br><br>*Jean Ann Foley*<br><br>*Asst. Prof., Teaching and Learning Dept.,* | $19,738 | Provide a more realistic curricular framework to enrich teacher preparation courses. | Creation of video-based learning scenarios to more actively engage students in the culture of the classroom. | With input from practicing teachers, scenarios were developed and filmed. The videos were further refined based on feedback from the pilot group | Students are engaged with individual student research and discovery as they are able to apply classroom management theory to | Having video available that depicts a classroom issue has created interest from professors who are typically not highly interested in technology. |

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
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| *NAU* | | | | of students.

The video was embedded in a problem based learning assignment; students were required to problem solve and generate classroom management products.

Three initial courses affecting 120 students utilized the video.

In terms of the format and materials of the PBL unit, 94% of students found "effective" or "very effective" the materials to understand the problem. | video scenarios.

Pre-service teachers are now able to experience some of the pressures, constraints, and systems of support that can influence curriculum construction and delivery. They are able to create classroom management solutions.

Students effectively communicate management plans and project results.

Students developed a web site with annotated links to areas of concern for teachers: classroom management, special needs, accountability, and technology.

Additional courses are implementing the video. | |
| **WEBWORK IN THE CALCULUS CURRICULUM**

*Janet M. McShane*

*Assoc. Prof., Mathematics &* | $18,675 | Improve student mathematical learning in the calculus sequence by using the WeBWorK online | Adaptation and implementation of the WeBWorK online homework system into the calculus sequence. This involved installing the | The online homework system was used in 40 sections of 9 distinct courses, impacting 1125 students the | Students are taking greater responsibility for their own education.

DFW rates were reduced; the pilot | Instructors are able to view previously submitted answers and to address the errors surrounding the initial mistakes.

Based on the results of |

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| *Statistics Dept., NAU* | | homework system. | system, learning how it worked, and training faculty in its use. | first year. | courses experienced declines from 43% to 30% in Calc I and 35% to 21% in Calc II.<br><br>Students were more engaged and spent more time on task: 2.2 hours on average on WeBWorK assignments compared with 1.7 on traditional homework.<br><br>The use of the homework tool provided immediate feedback to students, a feature 89% of students agreed or strongly agreed was valuable for learning. Students also found the ability to rework problems to be useful to their learning. Immediate and complete feedback on the assignments also improved the quality of grading.<br><br>Comprehension of the material and homework scores increased. | this project, WeBWorK was implemented into other mathematics courses. |
| **DEVELOPING SCHOLAR-TEACHERS IN** | $17,000 | 1. Deepen doctoral students' knowledge surrounding learner- | Develop a one-credit professional development courses | The professional development course, ENG 599, was | The development of new materials and resources to broaden | Through the creation of a network, student isolation was reduced. |

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
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| **DOCTORAL EDUCATION: A LEARNER-CENTERED APPROACH**<br><br>*Lourdes Ortega/Joan Jamieson*<br><br>*Asst. Professors, English Dept., NAU* | | centered education in tertiary institutions in the US.<br><br>2. Increase awareness of resources for the successful design, implementation, and evaluation of leaner-centered education<br><br>3. Develop students' familiarity with the varying expectations regarding teaching and scholarship across a range of institutions.<br><br>4. Assist students in creating a personal vision encompassing research, teaching, and service.<br><br>Additional objectives based on student feedback:<br><br>Identify the range of jobs available to graduates of Applied Linguistics Studies and describe the procedures in applying for faculty positions. | whose goal is to incorporate structured apprenticeship into the role of scholar-teacher in the regular course of doctoral studies in the Applied Linguistics PhD Program at NAU. | developed and piloted. Seventeen students participated in the piloted course.<br><br>A course resource web page on learner-centered education was developed. It includes links to 16 sites related to LCE and four related to the development of a teaching philosophy.<br><br>A learner-centered syllabus was developed, as were lesson plans and resources including: job ads, example letters of application, online learner-centered education resources links, and descriptions of faculty duties in teaching, research, and service. | skills in relation to LCE. Students felt knowledgeable about learner-centered education.<br><br>Students were successfully introduced to the function and expectations of future faculty. A forum was created for new faculty and PhD students to exchange ideas about the roles and responsibilities of the professoriate.<br><br>The project was modified in response to students' knowledge of LCE principles. The course was further refined and approved as a regular offering as ENG 787 Professional Development Seminar.<br><br>Three doctoral students presented the project outcomes at a major conference. | |

June 22-23, 2006
Item #25
Page 63 of 88

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
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| **DISCOVERING GENETICS: A LEARNER-CENTERED UNDERGRADUATE LABORATORY COURSE**<br><br>*Karen P. VanWinkle-Swift*<br><br>*Regents Prof., Biological Sciences, NAU* | $24,572 | Modify, implement, and institutionalize a discovery-based undergraduate laboratory course in genetics. | Based on outcomes of a 2002 pilot, modify the undergraduate course, Discovering Genetics, to offer in Spring 2004 and Spring 2005. The project involved the creation of supporting materials and tools. | Twelve students enrolled in the course in spring 2004; ten in spring 2005. Faculty research has been integrated into the undergraduate curriculum; the single-celled organism Chlamydomonas monoica is used as a model for introducing students to original research and discovery. | The development of rubrics as part of the course structure established uniform standards and therefore student learning is less subjective. The quality of student work has improved.<br><br>A formal lab manual is now available for the course.<br><br>Students are able to design, conduct and report (written and oral) original genetic research using a simple microorganism.<br><br>Student collaboration has increased.<br><br>Students now have the ability to conduct research within the constraints of a busy schedule.<br><br>In the course evaluations, all the students indicated that the lab increased their understanding of basic genetics principles, reinforced concepts presented in lecture, felt more like "real science" than other lab | The structure of the course requires efficient use of time on the part of both faculty and students. |

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| | | | | | courses than typical lab courses, and increased their confidence in their ability to think critically and reach their own conclusions. | |

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# Learner-Centered Education (LCE)
# The University of Arizona (UA)
# November 18, 2005

## A Self Study

The University of Arizona has been the most steadily-dedicated and enthusiastic participant in the LCE Grants program since it was established by ABOR in 2001-02.  Since that time, the UA has submitted by far the most proposals and been awarded more dollars overall (from 2002-05) than either of its sister institutions in the state.  We have also participated steadily and powerfully in several Tri-University LCE Projects over that same period (see below).  Concurrently, as we note in what follows, we have also been instituting many additional learner-centered methods in our courses and departments (listed later) besides what has been funded by these grants.  The Grant Program has thus been *one* major element, but not the only one, in a University-wide effort to become a more learner-centered institution of higher education across all our colleges and even at our branch campus (UA South, based in Sierra Vista).

This process is ongoing and has been greatly aided in many different areas by the LCE Grants from ABOR.  Many advances in LCE here would not have even begun without this kind and continuity of support, and many faculty at various levels have taken advantage of this opportunity to improve their teaching and the systems that support instruction in their areas.  At the same time, keeping many of these initiatives going requires the University to assume financial support for assistants or technology, and that has sometimes – but not always -- proven difficult in the face of many state budget reductions since 2001.  The overall educational climate at the UA is undoubtedly more learner-centered than it was five years ago, as one can see from our attempts to specify and move towards learning outcomes and student outcomes assessment (see our developing Outcomes Assessment web site, dedicated first to stating the overarching outcomes for each degree program: http://outcomes.web.arizona.edu/index.php).

The LCE Grants, then, have been a major tributary to a larger flow in a learner-centered direction that has been supported from many quarters.  But the degree to which this flow can both continue and accelerate depends to some degree on continued Regents support, given the problem of seeding new initiatives in an era of declining state resources combined with rising enrolments.  That paradox is surely a main reason why the current cycle of LCE Grant proposals has been focussed, by ABOR request, on LCE techniques in larger, and mostly General Studies, courses, given that increased enrollments without enough matching faculty increases is resulting in more such classes for the foreseeable future. Even as the Grants Program is somewhat refocused to meet changing times and conditions, all the Arizona universities need the future support of the Board and its 301 funds to keep moving vigorously in a more learner-centered direction.

In the meantime, though, when we composite all the LCE Grant-based accomplishments at our University thus far -- conveniently charted on the accompanying Data Matrix of UA grants from 2002 to 2004 – we do see very significant positive impacts in numbers of students newly exposed to LCE techniques, the amount and types of faculty involved, the range of LCE Grant categories encompassed, the populations affected both on campus and through community outreach, the widely varying size of affected classes and programs, and finally in the broad range of colleges that have participated (which shows the extent to which learner-centered education is spreading across the entire University of Arizona).   By amalgamating the attached data organized by project, in other words – and organizing it in larger block categories -- we see these overall measures of the Program's success at the UA:

**Numbers of students initially impacted at UA** (excluding Tri-University Grants)**:**
> Award Year 2002 –  at least 730
> Award Year 2003 –  at least 1608 directly, plus hundreds involved as participants in
> > student-run projects

Award Year 2004 – estimated 200-215 reported thus far over 4 projects (plus 25 high
school students), given that these projects are not all complete yet
Award Year 2005 – still to be determined

(Tri-University Grants involving the UA since 2001 have impacted over 5500 students overall)

**Number and types of UA faculty involved *as leaders*, 2002-05** (listed as PI or co-PI):
7 professors
12 associate professors
5 assistant professors
4 Program Directors
6 with research, extension, or lecturer titles (Academic Professionals)
1 graduate student

(The data in this category encompass UA grants and Tri-University Grants involving the UA)

**Number of System faculty affected by UA grants either as leaders *or* trainees:** 68 (incl. Tri-
U groups)

**How often each LCE Grant *Category* is addressed in UA Grants awarded, 2002-05:**

Development or Modifications of Programs/Courses/Modules: 19 times
Professional Development: 7 times (including Tri-University Grants involving UA)
LCE Research: 2 times (assuming studies of LCE's effects are distinct from these others)
Improved Assessment of Learning Outcomes (Course or Program): 6 times

(In some grants, two or three of these categories have been addressed at the same time. Each use of a
category has been counted here, so certain grants are counted above more than once.)

**LCE Grants at UA that have helped address learning needs in special populations:**
* Canfield – Learner-Centered Labs for American Indian undergraduates
* Martinez – Crossing Borders - interaction opportunities for heritage language speakers
and second language learners
* Kim – Perspectives Project - linking international students with CESL students
* McBride – Women@Work - outreach targeting rural homebound women

**UA Colleges whose faculty have successfully applied for and run LCE Grants**:
College of Science (5 grants)
Eller College of Management (3)
College of Agriculture and Life Sciences (2)
College of Engineering (2)
College of Fine Arts (2)
Arizona Health Sciences Center (2: Cancer Center, Pharmacy)
College of Humanities (2)
College of Social and Behavioral Sciences (2)
University Teaching Center (2)
James E. Rogers College of Law (1)
Center for English as a Second Language (1)
University of Arizona, South (1)

**Sizes of classes affected by LCE Grants at the UA, 2002-04**:
Small (up to 25):  3
Medium-sized (25-85): 9
Large (100- ):  6

(Some grants are strictly faculty development or assessment ones where eventual numbers of students served is as yet unknown)

**Learner-Centered Initiatives at the UA that are not directly funded by ABOR grants:**

University-wide Outcomes Assessment Program (see web site noted above)
Teaching Teams and Einstein's Proteges (students as group leaders in Gen. Ed.)
Learning Technologies Center (serving faculty in active-learning course design)
Learner-Centered Techniques classes at the University Teaching Center
Arizona Universities Network (AzUN, locus of online courses system-wide)
Awards of Distinction for Outstanding Teaching (several, often awarded to learner-
  centered innovators)

It is still too early to tell how many of our initiatives have crossed in the same form to the other Arizona campuses, especially via Tri-University projects. The future will also tell us more about how long all these initiatives have lasted (or will last) and how many students are eventually effected. Even so, we clearly see very substantial impact and change in many faculty – and,0 most importantly, in the student experience – all across the UA because of what the ABOR Learner-Centered Education Grants have empowered us to do.

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| **2002** | | | | | | |
| **PROJECT SKY (STUDENTS, KIDS, AND YOUTH)**  *Mari Wilhelm*  *College of Agriculture and Life Sciences* | $24,994 | Develop or modify a program, course or module | A new service learning initiative to (a) prepare Family Studies & Human Development undergraduate students, through applied professional training, for a career in the field of positive youth development while providing (b) direct service to youth through an established organization: Child and Family Resources, Inc. (CFR). | Two pilot groups of students, 32 in all, successfully completed the training and worked with youth in applying what they learned.  A new partnership with a community agency (CFR) was developed and is continuing. Students gained practical experience at community program sites. | Retrospective pretest evaluations were given to participants, and an agency survey was completed by CFR members.  Both showed participant competency in youth development greatly improved compared to previous cohorts of UA students. | *Needed from outside*: the availability of a youth-development training curriculum. *Potential problem*: funding cuts to non-profit community organizations such as CFR. |
| **ENGINEERING (ENG) 211 COURSE SUITE**  *Jeffrey Goldberg and Kevin Lansey*  *College of Engineering* | $24,920 | Develop or modify a program, course, or module | Modifications and editing of web-based modules on basic ENG concepts and skills: expanding content in two of the module areas, adding more learner-centered features | 6 UA faculty and faculty at 6 other universities are using these modules for basic ENG instruction and review.  The design of these models has also helped | Attitude surveys of students, exam score comparisons, and a grad. student's research project all show that some modules improve student learning over the old method but that others do not.  An NSF | *Potential problem*: the loss of experiential knowledge upon graduation of a key TA and the student development team. |

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| | | | (esp. interactive ones) throughout, and better evaluating the amount of learning that results from the use of online modules. Students using the modules as part of ENG 211 are supposed to learn the material at least as well as their counterparts in the traditional course, and now the modules are available for continuous student "refresh" and review after the freshman year. | students who have non-linear learning styles; now learning style is no longer an automatic indicator of class performance. *Side benefit*: the revised materials are available online for persons studying for the Professional Engineering exam. | grant is now being sought for further modification and expansion of this project. | |
| **INTEGRATED LEARNING WEBSITE: HELPING CHEMISTRY STUDENTS TO MAKE CONNECTIONS**<br><br>*Vicente Talanquer*<br><br>*College of Science* | $24,913 | Develop or modify a course or module | The development of a web site, web threads within the site, and a set of virtual tools that promote meaningful and active learning inside and outside the General Chemistry classroom, while bringing more coherence to the knowledge students develop. | The ChemThreads Web Site has been created by the new Vertical Integration Project Committee in Chemistry, within which three learning threads for basic Chem. students are now available. Five module prototypes for these threads have also been tested in the Gen. Chem. classroom. 25 interactive digital overheads have also been created | Conceptual Chemistry pre-tests and post-tests – the seeds of a common final exam in General Chemistry – have been developed in connection with, and even using, these new modules. Those students who have taken these instruments, in general, show higher levels of total understanding than their counterparts in General Chem. prior to the including of these web-based modules in | These online tools can be used by students for private interactive learning, by faculty in class for demonstrations, and by groups of students producing individual projects. |

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| | | | | for students and teachers to work together on molecular structure and other topics. Several results of this innovative work have been published in *The Chemical Educator,* vol. 10 (2005). | the curriculum. | |
| **PARK AVENUE RECORDS: A STUDENT-RUN RECORDING COMPANY** *Rex Woods and Jeff Haskell* *College of Fine Arts* | $22,640 | Develop or modify a program, course or module | The establishment of a student-run record company as one basis for an emphasis on recording production within the curriculum for the BA in Music Business. This project can thus provide students with education and work experience in all aspects of the operations of a commercial recording company. | In Dec. 2002, Park Avenue Records (PAR) released its first CD. Efforts are also ongoing to expand the label's market and produce more CD's. Students have proven that they could establish a student-run record company. Four Music courses have also been connected with this project in an ongoing way. | Student surveys indicate the development of life-long skills in participants who lacked this hands-on opportunity before. The release of the first CD also points to the need to establish a closer partnership with the entrepreneurship program in the Eller College of Management. | It is as yet too early for recording company to be self- sufficient. Students need more of this type of training if the company is to flourish. *Potential problem*: the future recruitment of students willing to make the necessary commitment. |
| **ASSESSMENT OF AN INTERNET-DELIVERED LEARNER-CENTERED EDUCATION APPROACH TO INTRO. ASTRONOMY FOR NON-SCIENCE** | $25,000 | Develop or modify a program, course or module, but also do assessment research | Establishing an electronic version of a general astronomy class and studying the effects of LCE principles and practices on student learning and student | Students are indeed learning successfully on line but do not always show gains based on instructor feedback, which has been used less | Diagnostic pre-tests and content-based post-tests were employed comparatively between the classroom and online versions of this course. Substantial | Although the infrastructure is in place to do so, no funds are yet available to offer the online course to undergraduates on a continuing basis. The learning gains are not so |

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| **MAJORS**<br><br>*Timothy Slater*<br><br>*College of Science* | | | attitudes in such a course for non-science majors, with the goal of identifying the elements of *online* LCE that most effectively promote student learning. | online overall. Student attitudes are mildly positive, not changing much over the semester. There is evidence of upper-division students working well as online peer mentors who are effective with their fellow students. | learning gains, particularly conceptual ones, were shown to result from the online course, but the on-campus course, also with LCE methods in it, produced higher student post-test scores overall in the knowledge of content. | great as to justify the extra expense as yet. |
| **LEARNER-CENTERED EDUCATION IN BUSINESS, TECHNOLOGY, AND LAW: ARIZONA STARTUP.EDU**<br><br>*David E. Adelman*<br><br>*Rogers College of Law* | $25,000 | Develop or modify a program, course or module | Development of a new multidisciplinary course dedicated to establishing a high technology business startup company - initially for law and business school students, later to include science, engineering, and medical students. | This project has used a prototype summer class to lead to the creation of a regular-year class, begun in the Fall of 2003. It has also resulted in the development of reusable and interactive course materials, a new forum for interactions among 6 UA colleges, and new links to Arizona's high-tech business sector. | What the resulting course has had to assess most is the effectiveness of using a *case-study* approach where the development of a biotherapeutic creates the need to produce and market it effectively. This style has proved so effective at actively involving students that the creators are looking to develop more different kinds of case studies (nanotechnological, optical, etc.). | It would be helpful to have direct collaboration with someone in Eller College. It is also hard to get balanced representation outside the College of Law because of the demands within other disciplines to meet course requirements. |
| **A LEARNER-CENTERED LABORATORY COURSE FOR AMERICAN INDIAN UNDERGRADUATES** | $22,850 | Develop or modify a program, course or module, as well as study learning styles | American Indian undergraduates learned scientific method and theory by participating in the design and implementation of a | An experimental offering of this course in Spring 2004 led to a full course launch in Spring 2005. Some students have gone | Student evaluations, focus groups, and tribal evaluations have shown that interactivity improves the retention of biological knowledge and that peer teaching | *Potential problem*: it is difficult to identify a cohort of students with sufficiently similar levels of scientific preparation. |

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| *Louise Canfield*<br><br>*College of Medicine* | | | laboratory course on cancer biology. Problems were presented to the students in case-study form and were chosen to reflect the immediate health problems of Native Americans. | on to undergraduate research projects and one (so far) to a Ph.D. program in biomedical research. This process has also resulted in some good partnerships (with Native American Student Affairs, American Indian Studies, and cohorts at NAU) and has spawned a summer conference on the whole issue of Science Education for Native American students that involves NAU faculty and tribal leaders and educators, along with students and faculty from UA. Three additional courses of this type have also been developed as part of a certificate program now offered by the Arizona Cancer Center. | (students communicating their research to other students) helps learners internalize their own learning more, even as early as the freshman year. These results open the possibility of involving more kinds of minority students in future versions of such a course. | |
| **DEVELOPING AN INSTRUCTIONAL TRAINING MODEL, WITH DIAGNOSTICS,** | $25,000 | Faculty development | Training student teachers to use RapID: a product- | Approximately ten courses in the public schools were | Participant evaluations were combined with the evaluations of student | Participants expressed the need for even more content and continuing |

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| **IN SUPPORT OF E-LEARNING**<br><br>*June Harris*<br><br>*Teacher Education, UA South* | | | oriented instructional model based on the premise that educators have little time and minimal design experience for the development of instruction augmented with technology. This training is browser-based and helps apprentice and experienced instructors rapidly find interactive online or software materials for integration into their subject-area teaching, in part using the WebCT course management system. | immediately affected by this approach in 2002-03. To that end, it was clear that educators were better trained in the use of learner-centered activities that employed the new technology interactively *and* that these new technology-assisted techniques could be integrated into traditional teaching activities, now augmented (rather than replaced) by e-learning. | teachers by their supervising instructors. Both revealed that e-learning materials motivated students more and gave them more organizational schemes for actively organizing what they learned. The student teachers also showed the benefits of being "forced to think the whole learning process through" (as one said) because of having deliberately to incorporate instructional technology into public classroom teaching. | support. Some of the software and hardware resources proved more readily available than others. *Potential problem*: insufficient implementation of *diagnostic* software by participants to determine student success. |
| **2003** | | | | | | |
| **CROSSING BORDERS: CREATING COLLABORATIVE LEARNING COMMUNITIES ACROSS CULTURES AND COMPETENCIES**<br><br>*Glenn Martinez and Javier Duran*<br><br>*College of Humanities* | $25,000 | Develop or modify a program, course or module; research into the effects of learner-centered techniques | "Infusion": a structured interaction between *heritage*-language and second-language learners at the intermediate level of undergraduate education. This experiment in two intermediate Spanish classes in Fall 2003 worked to challenge | Exercises specifically designed to interplay HL and L2 students in these classes helped both groups with their different areas of weakness in language learning. HL students learned more about orthographic accent | Several data collections were done in these courses to measure the results of focused HL and L2 interactions. In one example, 30 dictated works had to be written out and marked with orthographic accents. The L2 students scored better initially, but the HL students improved | It was also found that, in an interaction setting of this kind, students multi-tasked more by shifting their attention from the task at hand to other ones related to their linguistic development. This result indicates that an even more dynamic approach to HL-L2 interaction may be needed in the future. |

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| | | | the prevailing belief that separation of heritage-language (HL) speakers and second-language (L2) speakers is necessary for effective teaching and learning. | placement in writing, for example, while L2 students learned more about the sounds of different Spanish dialects. | in subsequent iterations. | |
| **IMPROVED ASSESSMENT OF BUSINESS COMMUNICATION OUTCOMES AND STUDENT-CENTERED LEARNING**<br><br>*Diza Sauers*<br><br>*Eller College of Management* | $24,963 | Primarily assessment, but also to develop or modify a program, course, or module | To personalize and tailor the experience for 1600 students in the Business Communication Program, this project (a) measured incoming skill levels diagnostically, (b) tailored learner-interactive sections of B-AD 314 to meet different levels of need, one of them involving ESL support, and (c) developed assessment tools to measure exiting students' abilities in critical thinking and effective writing by the end of this process | The diagnostic testing of Fall 03 and Spring 04 student cohorts revealed different learning levels clearly, and sections of B-AD 314 were reorganized to range from Honors to developmental approaches. A *support lab* was also developed to help those students who were shown to need oral- and writing-skill support. More among all these students, including more among the support-lab group, have scored better on final assessments than used to be the case. The dissemination of | Students are assessed as groups upon both entering and exiting this program, and they also provide evaluations of the program as they complete it. These assessments and evaluations have all upheld the need for and effectiveness of the different sections of B-AD 314. They have even led to the creation of B-AD 315, now ongoing, as a workshop for students who still need to improve their writing-skill base and address other deficiencies in communication after taking B-AD 314. | *Potential problem*: Gathering baseline oral data through video taping is time-intensive. The support lab only accommodated 15 students per session, but the need is much greater than such small groups can address. |

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| | | | | this method has come to include presentations at two national conferences, plus a journal article. This model has thus grabbed national attention. | | |
| **LEADERSHIP LEARNING LABS: STUDENTS LEARNING AND LEADING**<br><br>*Nancy S. Huber*<br><br>*College of Agriculture and Life Sciences (now in the Office of the Provost)* | $25,967 | Develop or modify a program, course or module; Faculty development | Increase the number of students involved in learning and applying *leadership* concepts and skills in projects designed to engage and enhance the campus community, all through the modification of a course and the involvement of additional faculty in facilitating leadership labs using LCE principles. | Several versions of the new "Collaborative Leadership" course begun by this project have now been offered, and more are scheduled, affecting about 40 students per year. Learner-generated class projects, from enhancing teacher effectiveness to improving club collaborations, have engaged the campus community while several faculty members per year have had opportunity to learn and use LCE techniques. There has been a presentation at of this teaching concept at a | Participating faculty have all attested to greater knowledge of learner-centered techniques by the end of each course. Student portfolios and evaluations all show a much greater understanding of *collaborative* leadership. The projects for the whole campus have also drawn the appreciation of the President and the Provost. | *Potential problem*: insufficient cooperation among units teaching leadership concepts and skills because of ownership issues and different philosophical perspectives. *Positive potential:* the collaboration with ASU and NAU around leadership education shown at the "Common Ground" symposium. |

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
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| | | | | leadership conference in Guadalajara and at a "Common Ground" national symposium hosted by the UA as an extension of this project. | | |
| **THE PERSPECTIVES PROJECT**<br><br>*Sarah M. Kim*<br><br>*College of Humanities* | $18,000 | Develop or modify a program, course or module; Faculty development | Linking UA freshmen in Tier One General Education courses with international students who can provide unique perspectives on the class content, accomplished partly through twice-weekly meetings with CESL students, thus creating a more multicultural perspective by way of an existing Conversation Partner Program. | 6 Tier One or Tier Two Gen. Ed. classes took part in this experiment in 2003-04. The students from these courses met with 55 CESL students over that time. The Conversation Partner Program in ESL gained new life in the process. The Gen. Ed. students attested to the value of having their provincial thoughts on the course material challenged and better informed by international students. | Reports from all the involved students showed increased awareness and understanding of the concerns of the other group. Two UA participants have applied for international study opportunities. Eight of the UA students have volunteered to continue in the Conversation Partner Program. | *Potential problem*: Difficulty sustaining discussion on topics related to General Education course material, since the CESL students did not have as much of that as the UA students did. |
| **WOMEN @ WORK: A LEARNER-CENTERED DISTANCE EDUCATION** | $25,000 | Develop or modify a program, course or module; Faculty | A *Web-based certificate program* that reaches across the digital divide with | Four courses were designed with user-friendly graphics that also linked | A local business community survey revealed the basic skills that this program's | *Problem:* The losses just mentioned have prevented the movement from course development |

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| **PROGRAM FOR RURAL AND HOMEBOUND WOMEN**<br><br>*Kari McBride and Laura Briggs*<br><br>*College of Social and Behavioral Sciences* | | development; Outreach | 4 courses to provide rural and homebound women access to technology, education, and job opportunities they might otherwise not have. | participants to the UA's Virtual Training Company (which helps users learn computer skills). A project coordinator also developed several community partner relationships and led the development of the curriculum for the four courses: Women and Work, Telling Our Stories, Women and Health, and Women, Race, and Ethnicity. | target students need most to be good employment prospects: skills in technology and critical thinking. Other assessment mechanisms could not be employed because of (1) a sudden, substantial loss of Women's Studies faculty and (2) post 9/11 budget cuts that prevented us from continuing the program coordinator of the project. | (which was completed) to online course implementation, which has yet to take place. |
| **2004** | | | | | | |
| **A DIGITAL SELF-TUTORIAL FOR PIANO AND MUSIC STUDY**<br><br>*Dr. Lisa Zdechlik,*<br><br>*College of Fine Arts* | $24,999 | Program/Course Development or Modification | An interactive instructional CD-Rom that will facilitate a learner-centered approach to the study of piano and music through a linking of the performance of a musical composition with graphic representation of the musical score. | After the Center for New Media in Fine Arts here finished the design, this CD-Rom has been used (and tested) repeatedly in our *MUS 101A: Exploring Music Through the Piano for the General Education Student*. The Tutorial integrates graphic and audio information to facilitate both visual | A prototype of one piano composition has been completed and tested with MUS 101A students and has been shown, from pre-tests and post-tests, to help them better understand the concepts of rhythm, form, dynamics, and texture. Students have also commented positively on this prototype's usability and accessibility. These results have encouraged the further | *Problem*: The intricate, complex processes involved in this project have required more extensive research, expertise, and development time than was anticipated. |

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| | | | | and aural modes of learning. It is self-paced and thus may be used in the classroom or on an individual basis. The initial results of this effort have been presented at the Music Educator's national Conference and the National Conference on Keyboard Pedagogy. | development of 2-3 more compositions in the same format. | |
| **LEARNER-CENTERED MATHEMATICS EDUCATION FOR PRE-SERVICE TEACHERS**<br><br>*Peter Wiles*<br><br>*Math Education College of Science* | $19,430 | Program/Course Development or Modification; also Professional Development and Research | The development of 3 strategies, in the teaching of teachers, to enhance elementary mathematics courses in learner-centered ways: (1) focus on the mathematics of children's thinking; (2) incorporate technology to promote pre-geometric discovery learning; and (3) conduct workshops for new instructors to help them foster leaner-centered environments that will increase elem. math learning. | Implementation of the newly designed lessons began in the Fall 2004 edition of *Math 302A and 302B: Understanding Elementary Mathematics* (with 302B concentrating on pre-geometry). These additions have continued in the 2005-06 versions of these classes, and summer workshops have been run twice to introduce pre-service teachers to these new approaches to | Pre- and post-tests in the 302 classes have shown increased understanding of the course content because of these methods. Elementary math teachers who have participated thus far have also indicated how helpful the workshops have been to their teaching of elementary students. More of the above pre-test and post-test results will need to be gathered in 06-07 to see if changes need to be made in these additional learner-centered components for future cohorts of | Assessment is going to be enhanced shortly by videotapes of actual class discussions to see if these methods result in improved math learning through improved classroom dynamics. |

Board Meeting
June 22-23, 2006
Item # 25
Page 79 of 88

| PROJECT | AWARD | PROJECT OBJECTIVES | ACTIVITY TO ADDRESS OBJECTIVES | MEASURE OF SUCCESS | OUTCOME OF ASSESSMENT | OTHER OBSERVATIONS/ FINDINGS |
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| | | | | children's thinking and the use of technology for early geometry education. | student-teachers. | |
| **A WEB BASED SIMULATION ENVIRONMENT FOR A LEARNER-CENTERED SURFACE SCIENCE COURSE**<br><br>*Anthony J. Muscat*<br><br>*College of Engineering* | $22,000 | Program/Course Development or Modification | The development of a web-based simulation program for a course on the chemistry and physics of solid surfaces. The simulation components can be run forward to build new knowledge *or* in reverse to review or re-learn the basic science concepts addressed by the simulation. | A Fall 2004 surface-science course (ChEE 437/537) has the first to use this simulation environment online after it has been tested by a group of prototype students. This course is part of the Tri-University Engineering graduate program and can thus be used by some ASU and NAU students as well. This simulation program has also been disseminated via National Technological University through streaming video. It allows students on or off campus to digitally test and interactively manipulate the possible results of various motions on the surface of the earth and the | A sampling of students who have used this simulation environment in course work or via NTU has shown a rise in surface-science knowledge compared to previous cohorts and a 40% increase in the quality of student work on sample problems. This simulation scheme has also been presented, along with initial assessment data, at the 2004 Frontiers in Education Conference in Georgia. | Problem: Lesson preparation using lots of equations proved to be too much for MS Word, which led to a conversion to LaTex format. That has increased the initial development time of the project. |

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| | | | | objects on it. | | |
| **IMPROVING COMMUNICATION AND INFORMATION ACCESS WITHIN THE COMMUNITY ENVIRONMENTAL LEADERSHIP PROGRAM** *Diane Austin* *College of Social & Behavioral Science* | $25,000 | Program/Course Development or Modification; Improved Assessment of Learning Outcomes; Outreach | Enhancing the experiences of the student and faculty participants in the inter-disciplinary Community Environmental Leadership Program (CELP) by developing a common base – including (1) a training module for student interns, (2) a web-based communications network, and (3) an online retrieval interface -- from which students can continue to work together actively to address local environmental problems. All of this is occurring under the guidance of faculty in the Bureau of Applied Research in Anthropology (BARA). | All three new components are now actively in use. CELP student intern training has thus become more substantial and systematic, and the community-based research and outreach programs are the primary beneficiaries. The online enhancements especially have helped the students involved with CELP to (a) communicate with each other in a regularized way when they are geographically scattered and (b) to access the library of field notes that other students (current and previous) have compiled. The one-month training module in the field has also helped students learn more about the multi-ethnic communities | Post-intern interviews and questionnaires from 2004-05, as opposed to those in 2002-03, have shown a marked increase in student understanding of local cultural customs, student use of online sources to research environmental problems, and communication among CELP interns and faculty even when they are not in the same locations. | *Potential problem*: Loss of University personnel through budget cuts and staff turnover, but PI reports these problems were overcome during implementation of project. |

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| | | | | with which they work. | | |
| **A SHARED-ADVISOR MODEL FOR UNDERGRADUATE PHARMACY STUDENTS CONDUCTING RESEARCH** <br><br> *Marion K. Slack* <br><br> *College of Pharmacy* | $24,722 | Program/Course Development or Modification; Professional Development | A shared-advisor model of coaching undergraduate students doing their required research projects that allows the research experience to be offered to a student cohort that is 60% greater than in the immediate past. This conversion makes the students more active in the process by (a) providing a web site of research-skill exercises and modules, (b) offering proposal-writing workshops at different times for different groups of students, (c) allowing just-in-time workshops for small groups of students with common problems, and (d) drawing in community-based professionals as research advisors, this increasing student connections to the pharmacy community. In this | The website materials have been developed and installed, the small-group workshops were begun in the Fall of 2004, and several community-based project advisors have been recruited. The output of research projects, despite the increased number of students, has not slowed, and the students report more self-sufficiency *and* more attention to their needs when these arise. | End-of-project questionnaires have indicated that the overall revised research experience is at least as good for students as before in all major dimensions and *improved* from before in promoting self-sufficiency and finding assistance with particular problems. The College of Pharmacy, meanwhile, currently believes – depending on the outcomes of future student cohorts – that it may be able to continue to require a research project of all Pharm. D. candidates even through the total student numbers have risen sharply. | The technology support group has been down-sized, but more software is becoming available. The current approach includes a combination of software and adaptive programming. |

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| | | | way students proceed more at their own pace and call upon advisors as needed. | | | |
| **IMPROVING STUDENT-CENTERED LEARNING: MENTORING AND LANGUAGE SUPPORT LABS - PHASE II**<br><br>*Diza Sauers*<br><br>*Eller College of Management* | $24,999 | Program/Course Development or Modification ; Improved Assessment of Learning Outcomes | To build student communication skills among undergraduates before they enter the full professional Business program, learner-centered support labs – begun in 2002-03 (see above) – are being augmented in a *Phase II* to help *mid-range* students improve their oral and written skills (those with English as a second language among them), and advanced mentors who have gone through this process are also being identified to help students at earlier levels. | The Eller Business Communication Program, awarded an LCE grant in 2003, has used a follow-up grant to (1) provide additional English-language support to the 10% of the accepted student population that needs it and (b) create an organized group of student mentors from the Honors communication class in the College to help other students in the support labs and collect assessment data. | Assessments of the previous project have indicated the special needs that these Phase II elements are designed to meet. Initial assessments of Phase II have shown more improvement in the 10% of students who need additional English-language help. Evaluations thus far also praise the work of the student mentors during the first year of their use in the Eller College. | Sustainability depends on the ongoing capacity of support labs to continue delivering the cycle of diagnostics now in place and to respond to the needs for earlier intervention with students identified in previous project assessments. |

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| **2002** | | | | | | |
| **TRI-UNIVERSITY PROJECT FOR LEARNER-CENTERED EDUCATION**<br><br>*Duane Roen*<br><br>*Center for Learning and Teaching Excellence* | $33,300 | To develop a cadre of faculty who will engage in the study of learner-centered instructional practice, apply what they learn, assess the impact of what they learn, and share their learning with other faculty through workshops, mentoring, web-based materials, and videotapes at their own and each other's universities. | Representative faculty were selected from each institution and participated in institution-specific and tri-university workshops and retreats. | Analysis of syllabi for targeted courses based on principles of LCE. | Deepened faculty's ability to enhance student learning though knowledge and skill work in the principles underlying learner-centered education. Increased the interaction and skill knowledge of the faculty development units at the three institutions. | Identification of additional areas for faculty development. Limited department-level sustainability. |
| **2003** | | | | | | |
| **A TRI/BI - UNIVERSITY PORTABLE, LEARNER-CENTERED 34 CREDIT HOUR MASTER OF** | $50,000 | To provide access to an MSW degree program for bachelor-level social workers in northern Arizona.<br><br>To address the unmet | Development of a collaborative, portable and learner centered Master of Social Work program. | The targeted recruitment population goals were met or exceeded:<br><br>A cohort of 28 | Support is now in place for the development of Arizona's rural social service workforce. The MSW program provides access to professional education where none | Additional academic support was required by some students. The program coordinator was able to act as an advisor to meet these |

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| **SOCIAL WORK DEGREE PROGRAM**<br><br>*Karen Pugliesi, Chair/Professor, Sociology and Social Work, NAU*<br><br>*Karen Gerdes, Associate Professor, Human Services/ Social Work, ASU*<br><br>*Melissa Lovett, Chair/Associate Professor, Human Services / Social Work, ASU West* | | social service needs in northern Arizona due to a shortage of MSW-educated professionals.<br><br>To deliver a MSW program that allows for a contextual "fit" of the curriculum. | | students recruited into the program, 26 students remained enrolled at the time of the report – scheduled to graduate from the program in May 2005. (target 25-30)<br><br>Fourteen Native American students (54%) were part of the first cohort (target was 40%-50%)<br><br>Twenty-five students (93%) are non-traditional employed social workers (target 80%) | previously existed. The needs of rural people served by social service are better met due to the availability and flexibility of the program; the format accommodates the needs of employed students and the program focuses on an area of practice within students' own communities. | needs. |
| **A TRI/BI - UNIVERSITY - EVALUATING LEARNER- CENTERED EDUCATION THROUGH OUTCOMES ASSESSMENT OF STUDENT WRITING**<br><br>*Thomas Tyler Boulding, Director of the Writing Program, Department of* | $95,555 | To develop common program-wide outcomes assessment for the writing programs of the three universities. | Score large samples of student writing from each university to develop tri-university goals for English composition and a common scoring rubric for shared goals. | The three universities shared information about the goals, methods and outcomes of their writing classes. An articulated, shared scoring guide was piloted: portfolios from 2,415 students representing the three universities were reviewed to | The tri-university writing programs worked together to develop ways of monitoring and evaluating program-wide outcomes and assessment for first-year writing classes. A relatively new method of portfolio scoring was implemented. Data and insights have been shared and a network created between the | While common goals and assessment tools were identified, the needs and practices of the individual programs were respected. |

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| *English, UA*<br><br>*Sybylle Gruber, Associate Professor, Director of University Writing Program, English/Arts and Sciences, NAU*<br><br>*Gregory Glau, Director of Writing Programs, CLAS / English, ASU* | | | | provide data.<br><br>More than 20,000 students will be affected by the changes in terms of how writing is taught and assessed in their writing classes. | three institutions.<br><br>Instructors have clearer guidelines on what to teach in writing classes. | |
| **A TRI/BI - UNIVERSITY DIGITAL LOGIC COURSE AT NAU AND UA USING LEARNER- CENTERED METHODS**<br><br>*Phillip Mlsna, Assistant Professor, Electrical Engineering, NAU*<br><br>*Sarma Vrudhula, Professor, Computer Science & Engineering, UA*<br><br>*JoDale Carother, Associate Professor, UA* | $25,000 | To develop a key set of student skills that are built upon in later engineering courses.<br><br>NOTE: this is the second phase of a project designed to restructure existing courses in digital logic using LCE techniques. This phase focuses on producing significant and measurable improvements in student performance. | The primary focus of the work is the development and integration of a series of software modules and associated web materials that will serve to provide extensive student practice in a set of targeted topic areas. | The Karnaugh map applet developed in the first year was maintained and improved upon and two new applets were developed. A set of integrated but independent design tools was created to expose students to the complete industrial design process.<br><br>Test results indicate measured improvement in student scores. Use of applets and the revised test structure appears to produce a higher level of | Improved skills in specific topic areas of digital logic courses.<br><br>Improved student performance.<br><br>Greater understanding of logic design; complex tools allow for a deeper understanding of processes.<br><br>A foundation is now in place for substantial improvement in learning key concepts and skills, knowledge retention, and student success in subsequent courses. | This project was a key part of the curriculum restructuring of effort within the NAU electrical engineering department.<br><br>An existing gap in complexity between courses was filled with the new tools and design of the entry level course. |

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| | | | | performance on Karnaugh map problems.  (only 20% indicated conceptual problems compared with the historic rate of 50-60%)  Approximately 300 students were impacted in the first year. Additional courses are adopting the tools and this number will increase. | | |
| **2004** | | | | | | |
| **TRI-UNIVERSITY COLLABORATION ON LEARNER-CENTERED PRACTICE: CREATING LEARNING COMMUNITIES AMONG FACULTY AND STUDENTS** | $32,990 | To provide opportunities for faculty to explore LCE techniques in their courses as well as to assess those learning activities. | Workshops and consulting experiences on LCE topics and techniques, including creation of a tool box on LCE; written and web-based materials made available. | Content pre- and post-test survey; satisfaction surveys; poster presentations. | Increased skills with LCE; increased awareness of LCE focus; increased collaborative activities. | Cooperation among faculty development units at Regents institutions.  Faculty collaboration across institutions. |

**ATTACHMENT 5**

### SUMMARY OF FUNDED PROJECTS: 2002-2006

| BY CAMPUS | | | | | |
|---|---|---|---|---|---|
| | **2006** | 2005 | 2004 | 2003 | 2002 | TOTAL |
| ASU | **2** | 4 | 3 | 8 | 4 | 19 |
| NAU | **5** | 4 | 5 | 2 | 7 | 18 |
| UA | **3** | 4 | 6 | 5 | 8 | 23 |
| NAU/UA | | | | 1 | | 1 |
| ASU/UA | **1** | | | | | |
| NAU/ASU | | | 1 | 1 | | 2 |
| TRI-U | | 2 | 1 | 1 | 1 | 5 |
| | **11** | 14 | 16 | 18 | 20 | 68 |

| FUNDING BY INSTITUTION | | | | | | |
|---|---|---|---|---|---|---|
| | **2006** | 2005 | 2004 | 2003 | 2002 | Total |
| ASU | **$77,372** | $120,432 | $99,690 | $214,191 | $90,000 | $524,313 |
| NAU | **165,536** | 124,888 | 104,985 | 60,319 | 141,922 | 432,114 |
| UA | **106,358** | 97,916 | 141,139 | 125,930 | 195,137 | 560,122 |
| ASU/NAU | | | 49,400 | 50,000 | | 99,400 |
| NAU/UA | | | | 24,883 | | 24,883 |
| TRI-U | - | 195,700 | 99,997 | 95,555 | 100,000 | 491,252 |
| **Total** | **$349,266** | $538,936 | $495,211 | $570,878 | $527,059 | $2,132,084 |

| BY FUNDING LEVEL | | | | | | |
|---|---|---|---|---|---|---|
| | **2006** | 2005 | 2004 | 2003 | 2002 | Total |
| Up to $24,999 | **4** | 5 | 12 | 7 | 11 | 39 |
| Up to $49,999 | **7** | 7 | 2 | 8 | 7 | 31 |
| Up to $100,000 | **0** | 2 | 1 | 3 | 2 | 8 |
| | **11** | 14 | 15 | 18 | 20 | 78 |