Report of the visit of Ronald Bieniek to the University of the Western Cape under a UMSAEP grant

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Grant Title: A UMSAEP Linkage Project for cooperative learning centers for student success between Missouri University of Science & Technology and University of Western Cape

Dates of visit: 15 March – 8 April 2012

Purpose of visit: To initiate collaborations on increasing student success through efficient and effective cooperative learning venues, with particular attention to the LEAD model developed at Missouri S&T.

Set-up and Arrival

Karen Wallace of UWC’s Department of Chemistry visited Missouri S&T in October 2011 to see how the Learning Enhancement Across Disciplines Program (LEAD) operated to increase student success (http://lead.mst.edu). We had a very fruitful time together, exchanging ideas between ourselves and with other stakeholders. We laid plans for a visit to the University of the Western Cape (UWC) by me and my wife Valri, who holds a PhD in online instructional design and is the telecommuting eLearning Instructional Designer for Academic Affairs at the University of Alaska, Kenai Peninsula Campus.

After comparing 2012 calendars, it was decided that the best time for me to visit UWC were the dates above, particularly in that it minimized the number of days I had to arrange for a substitute instructor to cover my 430-student course because the dates included many no-class vacation days at S&T. Rod Uphoff, Director of the UMSAEP, kindly arranged lodging for my wife and me and suggested that I contact David Fisher, Dean of Sciences, because he was very interested in improving student success and pass rates in STEM courses. Dean Fisher was very interested and welcoming, and turned planning details over to Deputy Dean Gavin Maneveldt, Head of the Department of Biodiversity and Conservation Biology. I had also contacted Vivienne Bozalek, Director of Teaching and Learning, with whom I wanted to interact closely. She, Maneveldt, and Wallace worked together to set up a draft outline for my public lectures and continuing interactions – for which I was most grateful, and which came off smoothly.

When my wife Valri and I arrived at Cape Town International Airport late on 15 March, we were greeted by Karen Wallace, who got us to our apartment across from the Tyger Valley Mall, and who graciously oriented us to Cape Town and the University during the next few days. When I was introduced to Prof. Maneveldt, I was delighted by the warmth of the welcome and for the very nice office and infrastructural support that was prepared for me by him and his very competent administrative staff Linda van Heerden and Annamarie Martin.

LEAD Learning-Center Model

While at UWC, I made several presentations and had many meetings with groups and individuals to describe and offer for faculty consideration the LEAD model for cooperative learning assistance. The goal for all of us is to generate greater student success without causing disruptive change in departmental operations. We soon realized that some of the academic terminology normally used in the United States can cause confusion or misconceptions when employed in South Africa. US major is SA course, US course is SA module, US faculty is SA academic staff, US office hours is SA consulting hours, US business hours is SA office hours. I modified my word choice quickly, but still caused some humorous moments. In what follows, I will use the word “academic” as a noun to mean “a member of the academic staff.”
The main characteristics of a cooperative learning center in the LEAD model are:

- Academic staff have their consultation hours (~2 hours/week/lecturer) in an open “inviting” environment of a LEAD Learning Center, attracting a significant fraction of enrolled students
- Learning Centers are NOT recitations sections or tutoring centers or “help sessions”
- Operate during fixed hours each week for a specific module
- Run by academics as their consultation hours in an open environment where they do not hover
- accomplished undergrad peer instructors (for large classes) who benefit from pre-professional leadership and pedagogy training
- Learning Centers orchestrate cooperative “guided learning” where MASTERY can be fostered
- They are designed to:
  - improve understanding of content material
  - enhance analytical, proficiency, and teamwork skills
  - validate mastery of material by students
  - increase student confidence, personal responsibility and self-efficacy
- Facilitate learning-centered education that is more student-oriented, less teacher-centered
- Utilize social dynamics & camaraderie to form a student learning community
- Students are not required to attend, but do so to work on regular assignments due soon
- Directly promote best practices for student success including the Seven Principles for Good Practice in Undergraduate Education (http://lead.mst.edu/sevenprinciples/commentary.html)

Some major reasons for running such “LEAD-like learning centers”:

- Students are generally loath to enter the office lair of a academic staff member for a variety of reasons (fear, reticence to admit ignorance, do not know how they can “escape”, ....)
- Reasons to do it: academic staff will see
  - gain insight into student misunderstandings and difficulties
  - have fun interacting with greater numbers of students
  - have less complaints and problematical issues from students
  - Academic staff will project that they CARE about their students’ success
- Nurtures greater personal responsibility in students for their learning and mastering of material
- Attractive to all students, not just struggling ones – they are all in it together
- Data collected at Missouri S&T in physics, chemistry, and mathematics clearly demonstrates that students who regularly participate achieve significantly better performance

The message that I tried to convey was that the LEAD model could be implemented without excessive funding, but that its cost/benefit ratio could be very acceptable and doable. The approach not only fits nicely into UWC’s Strategic Plan for Teaching and Learning, but it would help the university inculcate the laudable Graduate Attributes it has set for its students, particularly:

- LIFELONG LEARNING: An attitude or stance towards themselves ... committed to and capable of continuous collaborative and individual learning

- OVERARCHING SKILLS AND ABILITIES:
  2. Critically and relevantly literate: UWC graduates will be able to seek, discern, use and apply information effectively in a range of contexts.
  3. Autonomous and collaborative ... to work independently and in collaboration with others, in a way that is informed by openness, curiosity and a desire to meet new challenges.
  5. Skilled Communicators: UWC graduates should recognise and value communication as a tool for negotiating and creating new understanding, interacting with diverse others, and furthering their own learning.
Bieniek Activities at UWC

While at UWC, I gave many public and individual presentations and workshops and had many meeting with individuals and small groups who contacted me or I reached out to them. These presentations included video clips of LEAD Learning Centers in operation at Missouri S&T. Some of the major events during my visit at UWC:

15.04    Settle into apartment, purchase needed things, get oriented to Cape Town and South Africa
19.03    Get situated in office in room BCB 4.104.1 of the Life Sciences Building, meet many people
20.03    Give public lecture (during term break) for science academics titled “Efficient faculty-run cooperative learning centers for student success in STEM disciplines”
22.03    Give workshop (during term break) to science academics titled “Workshop on cooperative learning centers in the STEM disciplines”
23.03    Meet with Vivienne Bozalek to learn about academic situation and culture at UWC
27.03    Give general public lecture titled “Efficient cooperative learning centers for student success”
28.03    Observe ECP physics class with collaborative student interactions (at invitation of T. Volkwyn)
         Present and dialog with Deputy Deans of Teaching and Learning (auspices of V. Bozalek);
         Give public lecture in the Physics Department titled “Mathematical God, Heavenly Physics”
         Dialog with Physics Prof. Cedric Linder about physics education research at UWC
29.03    Observe introductory chemistry class of K. Wallace
         Give workshop aimed at all academics titled “Workshop on cooperative learning centers”
         Meet with Deputy Vice Chancellor Bharuthram
30.03    Meet with David Fisher, Dean of Sciences
         Observe collaborative interactions in EMS graduate class (Lecturer Walter Uys)
02.04    Observe collaborative interactions in Extended Curriculum Program module ISC-153 (at invitation of J. Jürgens)
         Meet with V. Bozalek and S. Clarence about training of undergraduate peer learning assistants
03.04    Meet with Physics Head Reginaldt Madjoe and Prof. Basil Julies
         Present and dialog with educators in the Department of Economics and Management Sciences
         (invitation of N. Brouwer and M. November)
04.04    Dr. Valri Bieniek and I meet with Juliet Stoltenkamp
         Give public lecture in the Physics Department titled “Mathematical God, Heavenly Physics”
         Second meeting with Deputy Vice Chancellor Bharuthram
         Visit Office of International Relations, and meet Director L. Jackson
         Talk with lecturers in the biological science component of the Extended Curriculum Program
         (Maryke Meerkotter, Susanne Short, Rosemary Eager)
         Second meeting with Dean of Sciences David Fisher
05.05    Going away reception at UWC
         Visit University of Cape Town, proudly wearing UWC tie and colors
         Give public lecture “Efficient faculty-run cooperative learning centers for student success in STEM disciplines” (at invitation of UCT Science Faculty)
         Give public lecture in UCT Physics Department titled “Mathematical God, Heavenly Physics”
I also had many stimulating and fruitful conversations with many individuals in a variety of departments, and several additional discussions with Vivienne Bozalek and Karen Wallace.

**Misconceptions Encountered**

There were two related and serious misconceptions I encountered in my dialogues: one that is common and easily dealt with, but another that took me a bit of time to realize. The first was the initial belief of several academic staff that the LEAD model was really equivalent to tutoring assistance already provided for their students. LEAD-type Learning Centers are NOT tutoring sessions. Tutoring (in the American sense) is almost always individual based, and intimately one-on-one. Students will come for help with a particular problem or issue, and then go away. Sometimes tutoring is supplied for specific courses and other times it is the “hot seat” model in which students in a multitude of course modules can come in at the same time for assistance. There is little group or social interactions, and the course professor or lecturer does not participate in the tutoring. Students can become dependent upon the tutor because he/she becomes an integral part of completing the assigned homework/learning tasks. In my experience visiting MANY universities, only a small fraction of students use tutoring services at most institutions. In contrast, LEAD Learning Centers can regularly attract a LARGE percentage of students in a course, often 30-50%. The difference between individual tutoring and LEAD learning centers was relatively easy to describe, although I suspect some still felt there is little difference in impact. I just countered such beliefs is that students will vote with their time and their feet as to which is more effective. At Missouri S&T, the LEAD Program (which I direct) offers both Learning Centers and walk-in tutoring for large introductory courses. As is common at most universities, only a small fraction of students utilize the tutoring service, while hundreds of students utilize learning centers.

The second type of misconception was harder to resolve, even with academic staff who were very receptive (even inspired) by the ideas I was presenting. A LEAD-type learning center is NOT an American-style recitation section and NOT a South African tutorial section, or merely students working together collaboratively. When I visited classes at UWC in which students were interacting together in small groups on an assignment, I was surprised by the semi-frantic behavior that I witnessed because the students were trying to complete the tasks that must be turned in at the end of the session. Most seemed unprepared to do the assignment in the time allowed, and were grabbing for things just to put down. To me, there did not appear to be sufficient student focus on mastery learning or critical thinking within the time allotted with academic staff. Furthermore, the academic staff fully controlled the time-management of the student with regard to the assignment, subconsciously absolving the student of taking the responsibility of attending to it on his/her own decision.

I am not suggesting that there is little merit in the tutorial approach that has assignments turned in at the session. I explained our S&T’s chemistry department is now using them in their introductory courses – but they also have well-attended learning centers where students do homework. I STRONGLY believe that UWC students would greatly benefit from regular homework assignments that are due on the day after learning center sessions, so that they have the responsibility to master the material by the time it is due – rather than be forced to do it in a limited (and perhaps unrealistic) time in a tutorial. They would then have an incentive to spend time at a learning center as time on task, where the pressure to have homework done there is reduced – but their responsibility for them to master it in a timely way is increased. I talked to many UWC academics about this, and learned that giving homework on a regular schedule is very unusual. I argued that it would be very beneficial, and would encourage greater mastery of the content. In response, many academics said they don’t have the time to grade all the homework. I countered with several ideas: you don’t have to collect all the homework, just collect at random; not all problems have to be graded in detail, just one in a collected set; hire an undergraduate
to do the grading based upon a rubric supplied by the instructor (or the trained undergraduate); give
tough “pop quizzes” based on homework problems. A few academic staff seemed to believe that the
students should be mature enough to undertake problems/tasks that they select on their own from the
textbook or are suggested by the class instructor. I concurred that a few might have that maturity, but
in the real-world most students will not do that work unless there is a reward of points in some way. In
my own education, I was given homework that was graded when I was an undergraduate and graduate
student at University of California, Massachusetts Institute of Technology, and Harvard University.

Additional Observations
There as obviously much desire across the UWC campus to improve student performance, particularly as
measured by pass rates. And, as on many campuses I have visited and interacted with, there is a core
group who are dedicated to producing greater student success. However, there also seemed to be a
wide spread feeling that this is difficult to achieve this because of various boundary conditions and
institutional constraints. This is also a common situation, although amplified at UWC because of
lingering social and political problems related to South Africa’s apartheid history.

When I and my wife Valri gave the LEAD workshops, we set aside time for the participants to respond in
writing to two “tasks”

1. Please list three advantages/positives that you believe the collaborative learning center approach
   might offer for the increased success of students at University of Western Cape:
2. Give one or two major obstacles to implementing/adapting the Learning Center approach at UWC

The written workshop responses mirrored and confirmed what I heard during my discussions with
individuals throughout my visit. The major recurring themes are discussed below.

Advantages/Positives perceived for the learning center approach
1. Students will take greater responsibility for their learning of course material
2. Students will see advantages in working cooperatively, and enjoy the learning experience more
3. Students will get their individual misunderstandings dealt with either by other students or the
   academic on duty
4. More effective use of academic consulting hours
5. Academic staff do not have to prepare material
6. Academic staff would see what their students are struggling with

I believe the advantages above are self-evident and clear, so I will not comment on them

Obstacles to implementing/adapting the Learning Center approach at UWC
1. Academic staff and students do not have time in their schedules
2. It is hard to secure an open room where a LEAD Learning Center can be regularly held
3. There is little or no funding to hire undergraduate peer learning assistants
4. Students will not want to work together
5. There is little incentive/reward for academic staff to increase student success

I would like to discuss these in turn:

1. Academic staff and students do not have time in their schedules
I clearly reiterated often that the time an academic spends in running a LEAD-like learning center for his/her module would be all or part of his/her consulting hours. Therefore there would be no EXTRA time commitment. They would have to prepare nothing, although I would strongly urge they take time to assign homework, which is generally quick to select out of most textbooks, e.g., problems at the end of chapters in most STEM textbooks or questions from previous exams. Many UWC academic staff seemed to think that students had no time in their schedules but, after examining actual schedules and talking to some students, I discovered there were often blocks of time students had free. The learning center does not have to accommodate the schedules of all students because attendance is not required. Besides, if one is not offered, than no student can benefit. However, unlike the situation at Missouri S&T, the operation of learning centers in the evening was not thought viable because of concerns over travel safety. I did suggest that some academic staff might consider using run some of their lecture or tutorial sessions in the learning center mode, since the time and room were already in student schedules, as some faculty at Missouri S&T are doing.

2. It is hard to secure an open room where a LEAD Learning Center can be regularly held

This appears to be a real issue at UWC. Many academic staff informed me that rooms are not used (i.e., regularly open), even though they have been reserved by someone. I confirmed this by just walking around campus. I suggested that some tutorial or class time could be used for learning center operation (see above), or that alternative spaces (labs, foyers, hallways, etc.) could be employed as space for learning centers (as some instructors at Missouri S&T prefer). This was particularly frustrating to me during my last week at UWC because two in ECP life sciences instructors (M. Meerkotter and S. Short) were willing to try out a LEAD learning center for LFS-151, but were thwarted when they could not reserve a room for a single trial when the contacted central reservations. However, another lecturer in ECP life sciences who attended my workshop (R. Eager) just ran one in a lab that was open, and reported to me that it was well received by students and much less draining than a tutorial session!

3. There is little or no funding to hire undergraduate peer learning assistants

Resources are always an issue. But undergraduates are relatively inexpensive to hire, and well worth the new compensation rate of ZAR 62/hour. It would not require a significant shift or reallocation of funds within a department or the campus, and external funding might be available. Having peer undergraduates assisting alongside academic staff greatly enhances the experience of students and their willingness to come for assistance. Also the peer undergraduate assistants hired should not only be trained by a central office (e.g., Office of Teaching and Learning) in pedagogy, but also general leadership and motivational techniques to benefit to THEIR career preparation and prospects in a value-added way. Allow some might think that an a sufficient number of accomplished undergraduates might not be available, my experience has been that the money and pre-professional training will draw them into the program. Finally, it is not absolutely necessary to have a peer undergraduate assistant for an academic to run a LEAD Learning Center. Many professors in smaller enrollment courses at Missouri S&T run learning centers without them (e.g., see right-hand column at typical LEAD schedule at http://lead.mst.edu/media/studentsupport/lead/documents/assistFs2011.pdf). However, the large-enrollment foundational courses greatly benefit from the presence of undergraduate learning assistants.

4. Students will not want to work together

This is a common initial situation affected by cultural, family, and personal background and inclinations. However, during my visit, I demonstrated various techniques that cause a wide variety of students to decide to work together in a cooperative way – and have fun doing so. Because assignments are not
due at the end of a LEAD session (but perhaps are due the next day in class), students can relax, absorb, and have social interactions. That is what brings them in. Furthermore, the program sponsoring the learning centers and the academic staff involved with it can promote to students that increased mastery of knowledge and acquaintance with collaborative teamwork will translate into better job prospects and increased skills that contribute to career promotion. Some faculty may think that such pecuniary interests should not be part of the learning vision, but it may well be an important element in the inspiration to excel for many students.

5. There is little incentive/reward for academic staff to increase student success

This seems to be a universal characteristic of research-oriented institutions. Because I am also Director of New Faculty Programs, I have talked to fellow developers across the spectrum of academe about this issue. My basic message at UWC and elsewhere is that there is a finite time that academic staff have to spend on the educational component of their position – why not implement high-impact practices? Student success seems to be an increasingly important element in funding processes. How campus and department administration encourages good teaching practices that improve pass-rates must be decided upon internally as part of balancing the myriad components of a university’s mission using finite resources. The point I try to make is that running LEAD learning centers is an efficient and cost-effective way of being part of the solution and not part of a problem.

Future Actions

There appears to be much fertile ground at UWC for transplanting the LEAD model of academic assistance for student success. Vivenne Bozalek, Director of Teaching and Learning at UWC, has written a fine cost-efficient proposal to try out and adapt learning centers to the UWC environment, to which I offered some suggestions. Moderate funding can have significant impact on pass and graduate rates.

If funding becomes available, I hope that the following exchange visits occur:

In late summer 2012: Ron Bieniek returns to UWC to help orchestrate trial LEAD-like learning centers at UWC and help develop the training procedures for undergraduate peer learning assistants.

In early 2013, Vivienne Bozalek and Delia Marshall of UWC visit Missouri University of Science and Technology to see LEAD and other teaching innovations in operation, and also give their American colleagues their insights and research-based recommendations.

If additional funds are available, it would be great to include one or two undergraduates from each institution in the collaboration so that they can help convey the role of undergraduate peer learning assistants in the success of learning centers.

The goal is to set up a continuing symbiotic collaboration to the benefit of both Missouri S&T and the University of the Western Cape.