2006 – 2007 Strategic Planning Grant

Using GIS to Identify Student Retention Patterns at EWU

Project Lead:
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Project Contributors:
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Michelle Whittingham, Associate Vice President of Enrollment Services
EWU Faculty Member (as yet unnamed)

Project Summary
This proposal brings together EWU faculty, administrators, and students to develop strategies to address a central problem identified by EWU’s Strategic Planning Goals: student retention. Two students will work with two EWU faculty members, an Enrollment Services staff member, and an Independent Learning staff member to (1) analyze recent student retention patterns using Geographic Information System (GIS) technology during summer 2006; and (2) design and implement an in-depth longitudinal survey of twenty freshman entering in fall 2006 who are identified as “at risk” according to GIS analysis results, including the piloting of a Blackboard virtual “university transition” community. The goals of this proposal – that focus on identifying students who leave – are designed to complement a related retention proposal submitted by Michelle Whittingham, which focuses on students who stay.
Project Goals

The project centers on three goals that address the fundamental strategic planning goal of a rigorous and engaged student learning experience by asking not what success looks like, as does the Strategic Plan, but rather what from a student’s perspective failure looks like: who leaves Eastern and why?

**Goal 1**: Identify general demographic and geographic retention patterns in recent EWU student enrollment data.

- **Objective 1**: Create a database using GIS technology that statistically maps out retention patterns for freshman enrolling in the 2005-2006 school year.
- **Objective 2**: Identify a profile (or series of profiles) of an “at-risk” freshman.

**Goal 2**: Identify typical situations and motivating factors that could influence a student’s decision to leave EWU.

- **Objective 1**: Select 20 freshman who fit an “at-risk” profile as identified above to participate in a voluntary, year-long study.
- **Objective 2**: Conduct longitudinal, qualitative interviews with 20 freshman in our voluntary survey group.

**Goal 3**: Identify student intervention strategies appropriate for our students to increase retention rates and create engaged student learning experiences.

- **Objective 1**: Pilot a virtual “university transition” community using Blackboard that allows freshman who may otherwise feel isolated to communicate regularly with faculty, staff, and student mentors.
- **Objective 2**: Improve upon existing retention rates within the group of 20 freshman who participate in the longitudinal study – even if only one more student than expected stays at EWU at the end of their freshman year.

**Narrative Description**

While many on the EWU campus are excited by the possibilities offered by the Strategic Plan and its visionary question “What does success look like?,” to approximately twenty-three percent of our freshman the question is rather “What does
failure look like?” These are the students who do not return to EWU after their freshman year, whether because they chose to transfer to other institutions or leave academia entirely. Graduation rates are even lower; perhaps half of the students who begin with us will graduate with a degree from EWU within six years.

It may be small consolation that EWU is not alone. Student retention at the undergraduate level has been a nationwide concern since at least the 1970s when drops in enrollment startled university administrators after years of post-war growth. Numerous studies have been conducted to determine causes and identify successful intervention strategies. Much of the literature agrees on a central tenet – students who do not transition, or integrate, into the university community for whatever reason are more likely to leave than those who do. A more vexing question has been identifying the factors that are either advantageous or disadvantageous in this process. Possible candidates span the gamut from academic ones (educational preparedness, average grades, test scores, access to academic advising) to socioeconomic ones (income, ethnic background) to social ones (participating in sports, social groups), to geographic ones (living in residence halls, coming from a rural vs. urban background). While EWU maintains annual retention statistics for the student body population as a whole and thus we know how many leave EWU each year (Common Data Set 2005), we know considerably less about why they leave. This proposal seeks to identify some of the core factors that influence EWU students’ decisions.

Though the decision to leave university is always highly personal and the end result of unique circumstances, there nonetheless are general patterns that have been observed. Vincent Tinto (2004), one of the most widely recognized authorities on
retention in the United States, offers some chilling national statistics that help put our students’ experiences in perspective. In the longitudinal study he cites, approximately 56% of students who came from high-income families earned a bachelor’s degree within six years, vs. only 26% of students from low-income families. Educational preparation, though clearly positive in any case, was not necessarily the deciding factor: well-educated low-income students had a 42% drop-out rate, compared with a 19% drop-out rate amongst well-educated high-income students. Where you start from matters, he concludes.

In other words, Tinto articulates something that geographers have known for a long time: where you live and where you come from can be extremely influential factors in many life decisions and events. There is no reason to assume that student retention patterns would be any different, and indeed given Tinto’s observations they seem well suited to geographic analysis. Yet I know of no comprehensive geographic studies of retention patterns, a somewhat surprising circumstance given the powerful spatial information technologies that exist today.

Therefore, I propose to introduce geographic analysis in the form of GIS technology to the field of retention research, using EWU’s 2005-2006 enrollment data as a pilot dataset. GIS software can be used to process large amounts of information and present the results in appealing, easily accessible map format. Just as University Relations brochures typically include maps showing where EWU students come from, GIS can be used to create maps showing where students who leave EWU came from. Enrollment patterns can be mapped by home town or university residence and, through GIS’ underlying relational database, the findings can be cross-referenced with any
number of related data (such as income, ethnicity, educational background, etc.) to fine-
tune our understanding of student retention decisions.

GIS analysis can be performed at as fine-grained a level for which data exists – in
our case, we can map out enrollment patterns literally to the individual student
household. Yet the goal of this GIS analysis is not to target individuals but rather to
identify overarching patterns. Do students from the west side of the state return home
instead of finishing at EWU? Are students from small rural communities at higher risk?
Do students who come from impoverished neighborhoods stay longer if they attended a
private high school? Are students who live off campus less likely to stay at EWU than
those who live in dorms? Is there a relationship between commute distance and
retention? GIS maps can highlight such patterns that would otherwise be buried in
mountains of data.

The GIS phase is in some ways intended to raise more questions than it answers.
From the maps and accompanying Access database, we will be able to identify general
trends and construct a profile (or series of profiles) of “at-risk” students, but we will not
yet have a glimpse into why any particular set of factors might be influential. The second
phase of the grant shifts focus from quantitative data gathering to qualitative interviews
and, ultimately, the development of successful intervention strategies.

Interestingly (though not surprisingly), commonly recommended retention
strategies echo almost precisely the four strategies outlined in support of the Strategic
Plan’s student learning goal: supportive learning communities that encourage
student/faculty interaction; integrated career preparation; diversity and international
perspectives; and innovative support services to create an ideal learning environment.
These underlying learning goals shape the nature of our next phase of research. We propose to gather the qualitative information while simultaneously piloting an experimental “university transition” community that will involve a group of 20 at-risk freshmen in an active and supportive learning environment. This community will be both virtual (via Blackboard) and terrestrial (via monthly meetings). It will bring the 20 freshmen together with two faculty, two staff, and two mentor students in a sustained, year-long relationship. Though on the surface our goal in this phase is to carry out an in-depth longitudinal study that pinpoints factors affecting retention decisions, our underlying purpose is to help those 20 students transition successfully to EWU. A chronology of specific activities is outlined in the Timeline section below.

**Partners.** The partners in this grant are carefully chosen for the multiple, intersecting skills each brings. I propose to create a team with strong technological skills, a curiosity for innovation, and most importantly a proven track record of active and empathetic support for our students. Michelle Whittingham is the key resource; without her help and participation, this grant simply could not proceed. She not only is the liaison for enrollment data crucial to the study, but approaches retention with the enthusiasm and dedication envisioned in the Strategic Plan (it is perhaps telling that her companion grant proposal focuses on student retention success stories!). Her participation in the Freshman Survey Team will be invaluable. Janet Hubbard from Independent Learning provides technological support for designing and implementing the Blackboard Virtual Community. As well, her strong commitment to improving undergraduate education at EWU will serve her well as she interacts with students as a member of the Freshman Survey Team. The second faculty member has not yet been identified, but will be a
faculty member with extensive (and positive) experience working with freshmen, as well as strong technological skills. The two GIS analyst students, also not yet identified, will be proficient in GIS and possess good ‘people skills’ to interact with the freshmen. They will be responsible for carrying out the GIS analysis as directed by Stacy Warren. The final partners will be the 20 freshmen themselves, sort of the “stars” of the project. In order to recognize the importance of each partner, the proposal incorporates compensation for each. The two student GIS analysts will be paid part-time hourly wages, and the participating faculty and staff paid a stipend. In recognition of the 20 freshmen’s central role in the project – as well as to encourage their continued involvement – they will be offered a choice of a GPS unit (so symbolically they will always know where they are) or an iPod Shuffle (in honor of the on-going EWU marketing survey imagery). In addition, two freshmen in the group will be invited to continue as virtual community Blackboard facilitators, both to keep the active virtual community alive and to help convene a new cohort the following year. They will be compensated with a small stipend.

**Expected Outcomes**

By June 2007, we will have accomplished the following:

1. A series of GIS maps and accompanying Access database that highlight “risk zones” related to student retention patterns. Two types of maps will be produced. In the first series, regional and national maps will illustrate those home locations that have above-average concentrations of students who have left EWU. In the second series, the maps will focus on Cheney/Spokane and illustrate residential patterns of those who stay vs. those who leave.

2. A completed longitudinal study, involving 20 freshman, that identifies some of the situations and factors that influence retention decisions.
3. A successfully piloted Blackboard virtual community that allows freshmen to interact with faculty, staff, and other students on topics relating to the academic and social integration we theorize are crucial in retention decisions.

4. A white paper summarizing our findings and making specific policy recommendations for Enrollment Services.

5. A sustainable model (bolstered by written instructions) in which both the GIS analysis and the Blackboard virtual communities can be continued into the next year, at no additional cost.

Budget
A total of $15,000 is requested to cover faculty salary and stipends, student wages, stipends, and incentives, and map printing and distribution costs. The project lead will be compensated by the equivalent of two weeks summer salary for a total of $3000 including benefits, using the formula applied for faculty research grants. Each faculty and staff partner will receive a stipend of $500 for their participation. Two students will be offered 300 hours each, at $10.00/hour, in the GIS analyst positions for a total of $6600 in student wages including benefits. Incentives – students can chose between a Magellan GPS unit or an iPod Shuffle – will be offered to the twenty freshmen at roughly $100 a unit (and possibly less, if more choose the iPod option). Additionally, two of the freshmen will be invited to serve as virtual community facilitators and compensated an additional $415 each. Finally, a sum of $500 is requested to cover map printing and distribution charges.

Sustainability
The project will be sustained in several ways. (1) GIS analysis will continue by enlisting students enrolled in existing GIS classes to work with this data as a class project. GIS students can both update the analysis with more current data, and expand on the
information initially retrieved with new analytic questions stemming from our qualitative findings – for instance, subsequent waves of analysis may overlay income data, voting patterns, occupational data, agricultural information, and other patterns with student home towns. (2) Blackboard virtual communities piloted for this study once set up can be continued with minimal commitment from faculty and students, at no further cost. Toward the end of the grant cycle, we will enlist two freshmen virtual community members to act as facilitator/mentors the following year. Further, multiple transition communities could be launched that each bring together students of similar risk profiles to determine if they are more effective than diverse groupings of students. (3) As the results of our quantitative analysis will be reported to Enrollment Services as policy recommendations, they may affect future university retention efforts in unforeseen ways.

**Timetable**

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1 – Sept 1</td>
<td>GIS analysis</td>
<td>2 students Stacy, Michelle</td>
</tr>
<tr>
<td></td>
<td>Set up Blackboard Virtual Community</td>
<td>Stacy, Janet</td>
</tr>
<tr>
<td></td>
<td>Construct interview instrument</td>
<td>2 students Stacy, Michelle</td>
</tr>
<tr>
<td>Sept 1</td>
<td>Preliminary GIS results – maps and Access database made available</td>
<td>2 students Stacy</td>
</tr>
<tr>
<td>Sept 1 – Sept 23</td>
<td>Identify possible freshman who fit the “at risk” profile. Contact candidates until 20 agree to participate in study</td>
<td>Stacy, Michelle</td>
</tr>
<tr>
<td></td>
<td>Obtain IRB approval for interview instrument</td>
<td></td>
</tr>
<tr>
<td>Sept 23 – June 17</td>
<td>Conduct monthly face-to-face meetings with freshman group</td>
<td>Team</td>
</tr>
<tr>
<td></td>
<td>Launch and maintain Blackboard Virtual Transition Community site</td>
<td>Team</td>
</tr>
<tr>
<td>December 31</td>
<td>Complete fall assessment review for Blackboard and monthly meetings</td>
<td>Stacy</td>
</tr>
<tr>
<td></td>
<td>Final analysis of GIS results, written procedural instructions completed</td>
<td>2 students</td>
</tr>
<tr>
<td>March 31</td>
<td>Complete winter assessment review for Blackboard</td>
<td>Stacy</td>
</tr>
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and monthly meetings

<table>
<thead>
<tr>
<th>Date</th>
<th>Task</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 1</td>
<td>Administer follow-up Blackboard survey to 20 freshman</td>
<td>Stacy</td>
</tr>
<tr>
<td>June 30</td>
<td>Complete project assessment and white paper</td>
<td>Stacy</td>
</tr>
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</table>

**Evaluation and Assessment**

The activities proposed in this grant need to be evaluated on two levels: (1) did we successfully carry out activities as proposed, and (2) even with successful completion of all proposed tasks, will the results affect retention patterns at EWU? We will carry out the following assessment measures, as categorized by goals and activities:

**GIS Activities.**

1. Enrollment data successfully converted into GIS database
2. At least four regional/national and two local maps created
3. At least one at-risk profile identified from the GIS data
4. At least two variables worthy of further GIS analysis identified.
5. Written instructions completed so procedure can be repeated later

**Longitudinal Survey**

1. 20 Freshmen who meet the at-risk profile are recruited for the study
2. An interview instrument is successfully developed and approved
3. Students attend at least 80% of scheduled face-to-face meetings
4. At least four common retention decision factors are identified
5. Face-to-face meeting follow-up survey indicates students found it helpful

**Blackboard Virtual University Transition Community**

1. Each freshman visits the Blackboard site at least twice a month
2. Blackboard follow-up survey indicates students found it helpful
3. Manifest and latent content analyses of Blackboard virtual discussions indicate students discussed issues we identified as being possible risk factors

**Retention Strategies**

1. At least one policy recommendation is forwarded to Enrollment Services
2. The retention rate within our group of 20 freshmen exceeds the general EWU rate
Works Cited


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Detailed Budget

<table>
<thead>
<tr>
<th>Salary / Stipend</th>
<th>Base</th>
<th>Benefits</th>
<th>Total</th>
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<tbody>
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<td>Faculty Salary, Project Lead</td>
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<td>500</td>
<td>3000</td>
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<td>2 weeks summer + 20% benefits</td>
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<td>Faculty stipends, Partners (3)</td>
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<td>Stipend + 20% benefits</td>
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<td>Student GIS analysts (2)</td>
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<td>600 hours @ $10.00/hour + 11% benefits</td>
<td>6000</td>
<td>660</td>
<td>6600</td>
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<td>Freshman Virtual Community Facilitator (2)</td>
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<tr>
<td>Stipend + 11% benefits</td>
<td>748</td>
<td>82</td>
<td>830</td>
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Map Printing and Distribution Costs

| Map Printing and Distribution Costs                        |       | 500      |

Student Incentives

<table>
<thead>
<tr>
<th>Student Incentives</th>
<th>Base + Tax + Shipping</th>
<th>Units</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>• Magellan Explorist 100 GPS <strong>OR</strong></td>
<td>99+8.6%+5.95</td>
<td>20</td>
<td>2270</td>
</tr>
<tr>
<td>• iPod Shuffle</td>
<td>69+8.6%+5.95</td>
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<td></td>
</tr>
</tbody>
</table>

Total

| TOTAL                                                     |                     | 15000 |

12