

Exploration of MAP-Works® as a Tool to Facilitate Success of First-Year College of Agriculture and Life Sciences Students

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Summary and Implications

Students undergo a variety of transitions in their lives when they move away from home to begin their studies at Iowa State University (ISU). Altered living arrangements, enhanced level of academic competition, and a new social environment are but a few of the many adaptations that incoming freshmen students face. Although most students successfully make the transition to college life during their first year, approximately 15% of first-year students do not return to ISU for a second year. In order to proactively address students who may struggle during their first year we are exploring the potential use of a commercially available student success program (MAP-Works®) to help identify, early in their first semester, students who may struggle in the academic and/or social transition to ISU. In this study, we analyzed three years of data collected from full-time first-year students enrolled in the College of Agriculture and Life Sciences during their first semester at ISU. Students identified by MAP-Works® as having lowest risk for problems with the transition to college life had higher grade point averages and higher one-year retention rates than moderate risk students. In addition, high risk students had lower grade point averages and lower retention rates than either moderate or low risk students. These data show the potential utility of MAP-Works® as a tool for faculty academic advisors to identify students who may benefit from targeted intervention strategies geared toward increasing student success.

Introduction

Because many people spend more time at work than any other single activity (except perhaps for sleeping), becoming employed in a satisfying career is an important goal for many people. Data are available from a variety of sources which indicate that college graduates have the potential for greater lifetime earnings, greater satisfaction with career choices, and higher quality of life than those who do not earn a college degree.

As a society, we make immense investments in the education of our children because we want a higher quality of life for our children (who, not so coincidentally, are also our society's future leaders). This investment in our children's education begins in elementary school, continues

through college, and is funded by a combination of taxpayer dollars, parent contribution, and student earnings. In the current era of declining revenues to state and federal governments, a greater share of the financial cost of attending an institute of higher education is falling on students. For many students, this increased financial burden has caused them to increase time allotted to part-time work and decrease time devoted to attending classes and studying. Inappropriate balance between these two competing needs may hinder student academic success.

Iowa State University's commitment to addressing first-year student success is demonstrated by first-year experience programs such as learning communities, supplemental instruction, and peer mentor programs. Similar to many public and private colleges and universities, ISU recognizes that a certain proportion of students who begin their 4-year degree program do not persist at the university and thus fail to earn an ISU degree. Among first-year full-time students who choose not to continue their degree program, the greatest attrition rate occurs during the first year (particularly after the second semester). Published student development literature suggests that a student's experiences within the first 12 weeks (and especially in the first six weeks) are critical in shaping the student's academic success.

As one strategy to enhance the likelihood of student academic success, ISU launched a new initiative aimed at identifying students who may struggle with the first-year transition and who also may be at risk of not persisting at the institution. This initiative centered around use of a commercially-available student success program called MAP-Works® (Making Achievement Possible). The objective of this study is to provide a retrospective analysis of MAP-Works® data collected from students enrolled in majors based in the College of Agriculture and Life Sciences (which includes animal science and dairy science).

Materials and Methods

The Department of Residence, in conjunction with the Dean of Students Office, pioneered use of the MAP-Works® program at ISU in fall semester 2008, and use of the program continues today. The MAP-Works® effort at ISU targets first-year full-time students. Use of the MAP-Works® program on the ISU campus received institutional review board (IRB) review and approval under ID 08-230.

During weeks 3 through 6 of fall semester, all full-time first-year ISU students are asked to complete the MAP-Works® "fall transition survey". This extensive on-line survey is a student self-assessment of various factors known to be predictive of student success (e.g., academic goals, commitment and behaviors; financial concerns; time

management skills; lifestyle and living arrangements). Students are asked to self-report current academic experiences by responding to questions such as: What is the most difficult course you are taking? How many hours per week are you studying for exams? How much do you think about going home? How satisfied are you with your choice of major?

Student responses to the fall transition survey are analyzed via a proprietary MAP-Works® algorithm, and students are subsequently classified as high, moderate, or low risk for problems with the transition to college life. This risk assessment is based on a combination of survey responses and pre-college academic factors (e.g., ACT score, high school rank). Categorization of students as low, moderate, or high risk allows faculty academic advisors and student affairs professionals to proactively address students' self-identified concerns which have the potential to impede their success. Interactions with students (face-to-face, e-mail, or telephone) are documented within MAP-Works® to ensure that persons with direct connections to each student know that concerns are being addressed. By collaboratively and proactively working with students and referring them to appropriate student support services on campus, it is hoped to minimize the long-term impact of any adverse situations that arise early in the student's college career. A by-product of this collaborative effort is stronger relationships between academic support units, residential life, and faculty for meeting the academic and social transition needs of students.

The implementation of this student success initiative was done over a 4-year period. After the first year of using MAP-Works® within the Department of Residence and Dean of Students Office, academic advisors in the Colleges of Engineering and Liberal Arts & Sciences were given access to MAP-Works® student survey responses. During fall semester 2010 academic advisors in the Colleges of Business, Human Sciences, and Agriculture and Life Sciences were granted access to MAP-Works® survey responses. Academic advisors in the College of Design received access in fall semester 2011.

For this retrospective study, MAP-Works® survey responses collected from students enrolled in majors based in the College of Agriculture and Life Sciences during fall semesters 2008, 2009, and 2010 were analyzed using the SPSS statistical analysis software package.

Results and Discussion

University-wide MAP-Works® survey responses were 68.2%, 74.9% and 84.8% in 2008, 2009, and 2010, respectively. These high survey response rates likely occurred as a result of repeated requests for students to complete the fall transition survey in conjunction with incentives provided to students for survey completion (e.g., a pizza party for members of any residence hall floor that had a survey response rate $\geq 85\%$; or one-month free parking on campus for students based off-campus). These

high survey response rates also give credibility to the data set because they minimize the likelihood of erroneous conclusions caused by an inadequate or non-representative sample of the study population.

Data were collected from 384, 580, and 611 first-year full-time College of Agriculture and Life Sciences (CALS) students in 2008, 2009, and 2010, respectively. As expected, the number of CALS students who completed the fall transition survey was lower in fall 2008 (the inaugural year) than in subsequent fall semesters. The 2008 response rate of CALS students was, however, similar to that reported by other colleges at ISU.

Table 1 lists academic indicators and measures stratified by MAP-Works® risk indicator level (high, moderate, low). In general, there was a consistent relationship between MAP-Works® risk indicator level and fall semester grade point average (GPA), spring semester GPA, and one-year retention (persistence) rate. In the latter two years of the study where survey response rates were higher, low risk students earned higher ($P < .05$) GPAs and had higher ($P < .05$) one-year retention than moderate risk students, and moderate risk students earned higher ($P < .05$) GPAs and had higher ($P < .05$) one-year retention than high risk students.

Academic performance and retention data were also analyzed for students who chose not to complete the MAP-Works® fall transition survey. Compared with students who completed the survey, non-responders had a higher ($P < .05$) number of mid-term grade reports in both fall and spring semesters, a lower ($P < .05$) GPA in both fall and spring semesters, but similar ($P > .05$) one-year retention rate. These findings suggest that students who do not complete the fall transition survey should be considered at least as moderate risk students.

We are excited to have the opportunity to explore MAP-Works® as a potential tool to equip faculty academic advisors and student affairs professionals with information they can use to help students be successful. Potential benefits of MAP-Works® participation for students include: 1) identifying areas in which they are struggling, and 2) identifying campus support services (e.g., tutoring services, student counseling) available to assist them. In addition, students benefit because upon completion of the fall transition survey they receive immediate feedback on how they compare with their peer group at ISU. This feedback can "normalize" the ISU experience for some students, whereas for others it can serve as an incentive to modify their academic and social behaviors to enable them to "compete" with their successful peers.

Potential benefits of MAP-Works® participation for faculty and staff include: 1) identifying moderate and high risk students who may struggle with the transition to college life, and 2) being able to prioritize advising time by intervening first with students presenting the greatest need. Proactively addressing student concerns is preferable to reactively addressing them (e.g., it is better to refer a student

Iowa State University Animal Industry Report 2012

to tutoring services before the student fails an exam versus waiting until after the student receives a mid-term grade warning to offer assistance). Other important benefits to faculty and staff include learning information about a student before meeting with the student for the first time and also learning information that the student may not share during face-to-face meetings or via e-mail (e.g., students may not openly state they are homesick or have roommate conflicts, yet they often will divulge that information while taking the fall transition survey). Knowing issues of concern gives faculty advisors and student affairs professionals the opportunity to devise an effective strategy to overcome the potential barrier(s) to student success.

Potential benefits of MAP-Works® participation for the institution include: 1) increased collaboration between academic affairs and student affairs professionals, 2) identification of new areas to be addressed during summer orientation programs, 3) opportunity to enhance first-semester orientation courses to include topics that can potentially adversely impact student success, and 4) improved year-long first-year experience programs.

Finally, potential benefits of MAP-Works® participation for society include: 1) increased persistence of students in higher education (presumably enabling them to contribute to the nation's skilled workforce), and 2) a wise investment in the education of first-year full-time students by helping them be academically successful!

Iowa State University Animal Industry Report 2012

Table 1. Academic Measures of Iowa State University College of Agriculture and Life Sciences First-Year Full-Time Students Stratified by MAP-Works® Risk Indicator.

	2008-2009			2009-2010			2010-2011		
	Fall GPA	Spring GPA	One Year Retention	Fall GPA	Spring GPA	One Year Retention	Fall GPA	Spring GPA	One Year Retention
High risk indicator †	2.68	2.78	.78 ^a	2.27 ^a	2.41 ^a	.65 ^a	2.37 ^a	2.41 ^a	.76 ^a
Moderate risk indicator †	2.80	2.79	.83 ^a	2.62 ^b	2.58 ^b	.88 ^b	2.61 ^b	2.64 ^b	.85 ^b
Low risk indicator †	2.90	2.93	.93 ^b	2.85 ^c	2.86 ^c	.92 ^b	2.81 ^c	2.89 ^c	.95 ^c
Total	2.83	2.85	.87	2.66	2.67	.87	2.68	2.73	.88

† Risk indicator levels high, moderate, and low correspond with MAP-Works® risk indicator levels red, yellow, and green, respectively.

^{a,b,c} Means within a column with unlike superscripts are different (P<.05).