

The Bottom Line on Student Retention: Data-Driven Approaches that Work

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Overview of Presentation

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- Undergraduate Retention: Context and Overview
- Improving Retention: A Data-Driven, Best Practices Approach
- Sample Responses/Initiatives
- Conclusions
- Questions / Discussion

Undergraduate Retention: Context and Overview

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- Retention is a national higher education problem. <http://www.completecollege.org>
- Students who leave before graduation represent a lost revenue stream
- Replacement strategies can be costly and inefficient

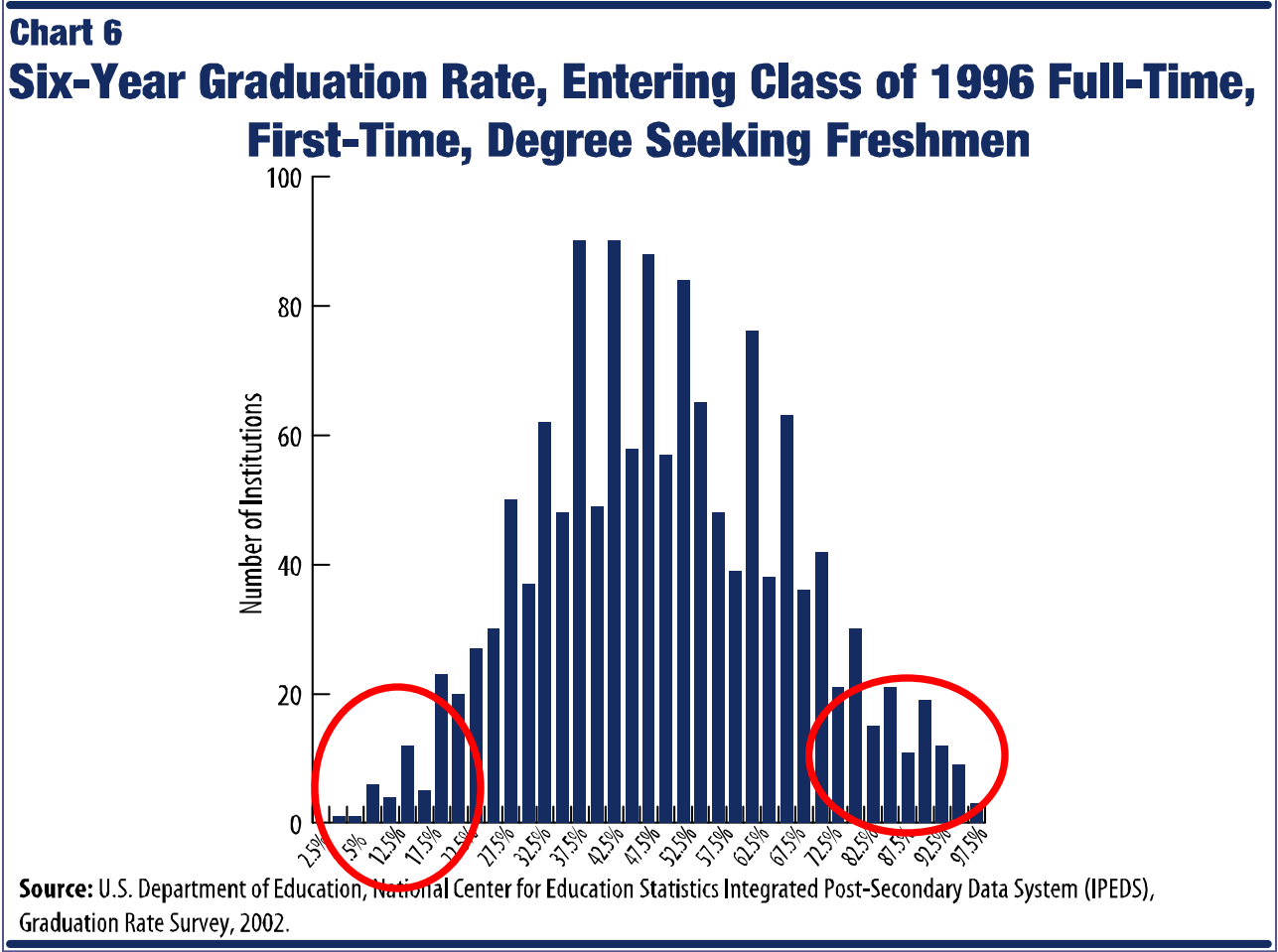
Current College Completion Rates: 4-Year Colleges

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- Approximately 4 in 10 entering freshmen obtain a bachelor's degree within 4 years.
- Within six years of entry, that proportion rises to about 6 in 10.
- If you go further, to look at graduation from ANY institution, numbers grow to about two-thirds.

Graduation Rates Vary Widely Across the Nation's Postsecondary Institutions

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- Some of these differences are clearly attributable to differences in student preparation and/or institutional mission. But not all...

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Great Lakes Private Institutions

Similar Students, Different Results

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	Median SAT	Size	% Pell	% URM	Overall Grad Rate	URM Grad Rate
Alma College	1,085	1,182	26.8%	4.2%	70.5%	N/A
Illinois College	1,085	1,008	24.5%	5.2%	58.0%	18.2%
Marietta College	1,065	1,361	27.8%	5.4%	56.1%	26.3%
Adrian College	1,045	1,022	31.4%	7.0%	50.2%	45.0%
Monmouth College	1,045	1,350	27.1%	8.7%	60.5%	76.5%

Some Important Lessons from Successful Campuses

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- They look at their data and act.
- They pay attention to leading indicators (early warning systems).
- They provide and require the academic support services needed.
- They assign clear responsibility for student success.

- From Kati Haycock, President of The Education Trust

- Some also develop intrusive intervention techniques

Improving Retention: A Data-Driven, Best Practices Approach

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- The Danger of the Anecdote
 - Some things are easier to admit than others (“I can’t afford it” versus “I’m homesick”).
 - Patterns are difficult to discern and so interventions aren’t targeted.
 - The voices of those that drift away aren’t heard.

Advantages of a Data-Driven Approach

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- Enables patterns to become clearer
- Supports targeted interventions
- Provides clear answers to key questions
 - How can we identify at-risk students?
 - Cohort retention rates/Grad rates by subpopulation/Predictive Retention
 - How can we know what is working?
 - What gaps do we need to address?
 - Where are they going when they leave?
 - NSC

Step One: Project Team and Preliminaries

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- Multi-disciplinary team
(CFO/budget, financial aid, admissions, academic affairs, institutional research, student life, information technology)
- Project timeline
- Budget ???

Step Two: Assemble and Review

“Off-the-Shelf” Research

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- Descriptions of existing retention-related initiatives
- National survey research (NSSE, SSI, CIRP, Others?)
- Institutional surveys/exit interviews
- General enrollment/retention trends

Step Three: Commission New Research/ Update and Augment “Old” Research

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- Table analysis
- Predictive modeling
- National Student Clearinghouse
- Custom surveys
- Benchmarking
- Interviews & focus groups

Sample Table Analysis I

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Retention of Aided and Non-Aided Students by Academic Area					
College	A&S	EDUC	ENGIN	NURS	ALL
Entering Cohort					
2004 (Retain to Term 5)					
Non-Aided	72%	94%	68%	70%	73%
Aided	76%	82%	81%	88%	78%
2005 (Retain to Term 5)					
Non-Aided	73%	71%	79%	67%	73%
Aided	82%	84%	89%	86%	84%
2006 (Retain to Term 3)					
Non-Aided	83%	100%	83%	75%	84%
Aided	88%	93%	91%	90%	90%

Sample Table Analysis II

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Freshman to Sophomore Retention of Freshman Cohorts (2004-2010) by Need Level			
	Term 1	Term 3	
No FAFSA	1141	673	59.0%
\$0 (No need)	664	513	77.3%
\$1-\$10,000	514	391	76.1%
10,001-16,000	535	403	75.3%
\$16,001-\$22,000	694	503	72.5%
\$22,001-\$28,000	1112	803	72.2%
>\$28,000	1002	714	71.3%

- Profile “attrits” and retained students by:
 - Financial aid group
 - Entry statistics
 - Program area
 - Gender
 - GPA at institution
 - Ethnicity
 - Etc.

- Goals
 - Identify factors important in the re-enrollment decision (holding other factors constant) using multiple logistic regression analysis
 - Develop targeted intervention strategies

What is Predictive Modeling (or Multiple Logistic Regression)?

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- Multiple Logistic Regression, is a statistical procedure used for the inference, prediction, and modeling of causal relationships.
- In a retention model, for example, the probability of re-enrollment for each student is determined as a function of individual student characteristics appropriate for the institution.
- Probability that a student will enroll = f (student need, major, SAT, etc.).

Sample Predictive Retention Model

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Variable	Coefficient (impact on probability of retention to Term 3)	Description
Total Grant	+0.5%	For every \$1000 increase in total grant a person is .5% more likely to retain to Term 3
Unmet Need	-0.5%	For every \$1000 increase in unmet need a person is .5% less likely to retain to Term 3
Term 1 GPA	+14.2%	For every 1 point increase in GPA (2.0 to 3.0) a person is over 14% more likely to retain to Term 3
Term 1 GPA < 1.75	-25.6%	Students with a Term 1 GPA < 1.75 are over 25% less likely to return to Term 3 than students with a Term 1 GPA > 1.75
In-State	+7.0%	In-state students are 7% more likely to retain to Term 3 than out-of-state students
Special Admits	-8.3%	Special admits are over 8% less likely to retain to Term 3 than regular admits
Engineers	-11.0%	Engineers are 11% less likely to retain to Term 3 than A&S students
Commuters	-5.0%	Commuter students are 5% less likely to retain to Term 3 than resident students

Possible Interventions Based on the Model

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- Special tutorial program for anyone with a < 1.75 Term 1 GPA, including mandatory study hall.
- Special advising strategy, including a focused first-year seminar, for engineering students.
- Given that in-state students are more likely to retain, the fact that commuters are less likely to retain makes them a target group for special attention.
- **Note: Increasing grant aid would NOT be recommended (cost/benefit)**

Possible Next Steps in Modeling

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- If achieving a particular Term 1 GPA or better is very significant in retaining to Term 3, then there are two additional models that could be constructed:
 - One would examine those factors that were significant in predicting retention to Term 3 for everyone who had a GPA $\geq X$.
 - The other would examine those factors that were significant in predicting who would achieve a GPA $< X$.

Sample Predictive Retention Model for Achievers

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Freshman Retention Model for Achievers Term 1 GPA \geq 2.25

Variable	Marginal Effects Calculation	Explanation
Total Grant	0.008193	For every \$10,000 of total grant retention to term 3 increases by 8%.
Term 1 GPA	0.044747	Students achieving a 2.25 or better term 1 GPA are 4.5% more likely to retain to term 3 than students with a term 1 GPA below 2.25.
HS GPA	0.076175	For every additional point increase in HS GPA (i.e. 2.25 to 3.25) retention to term 3 increases by 7.6%.
Attempted Hours	0.030916	For every additional credit hour attempted a student is 3% more likely to retain to term 3.
International Student	-0.32591	International students with a 2.25 term 1 GPA or better are 33% less likely to retain to term 3 than U.S. citizens with term 1 GPA of 2.25 or better.
Varsity Athlete	0.036798	Varsity athletes with term 1 GPA of 2.25 or better are 3.7% more likely to retain to term 3 than non-varsity athletes with a minimum 2.25 term 1 GPA.

- Will additional grant make a noticeable difference?
- Support systems in place for international students.

Sample Predictive Retention Model for At-Risk Students

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Estimating Low Term 1 GPA (< 2.25) for Freshmen

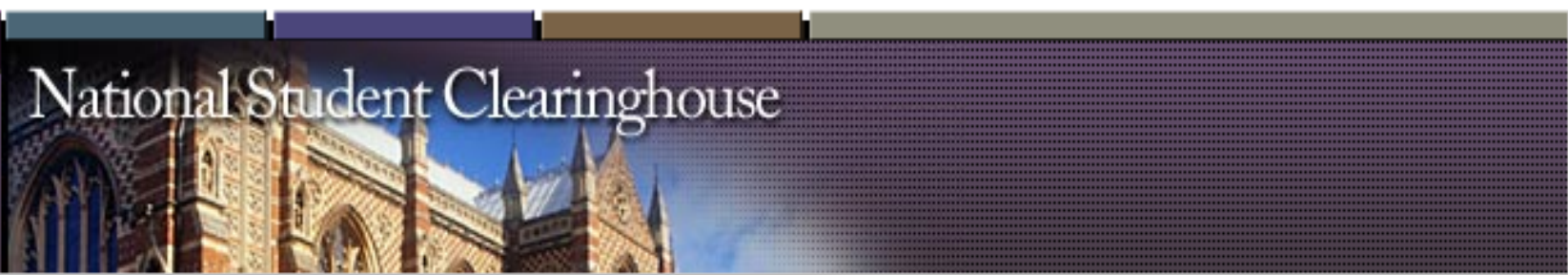
Variable	Marginal Effects Calculation	Explanation
Term 1 FM Need	0.002497	For every \$10,000 of demonstrated need a student is 2.5% more likely to earn a term 1 GPA below 2.25.
ACT Score	-0.01212	For every 1 point increase in ACT (i.e. 20 to 21) a student is 1.2% less likely to earn a term 1 GPA below 2.25.
Attempted Hours	-0.02736	For every additional credit hour attempted (i.e. 14 to 15) a student is 2.7% less likely to earn a term 1 GPA below 2.25.
Female Student	-0.09602	Female students are 9.6 less likely to earn a term 1 GPA below 2.25.
Minority Student	0.067698	Minority students are 6.8% more likely to eanr a term 1 GPA below 2.25
Commuter Student	-0.09433	Commuting students are 9.4% less likely to earn a term 1 GPA below 2.25
Athlete	-0.08645	Athletes are 8.6% less likely to earn a term 1 GPA below 2.25
Performed Service Hours	-0.11033	Students who fulfill service are 11% less likely to earn a term 1 GPA below 2.25
Judicial Incident	0.072875	Students who's behavior require judicial reporting are 7.3% more likely to earn a term 1 GPA below 2.25
Received EARP Notice	0.292596	Students who receive EARP notices are 29.3% more likely to earn a term 1 GPA below 2.25

- ACT prove to be strong assessment tool at point of admission evaluation
- Programming for male students
- Service plays a vital role in academic achievement

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National Student Clearinghouse



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- Custom surveys can uncover a variety of information about students who stay—*and* students who attrit
- Telephone based, third-party vendor surveys are best (but costly)
- Objective data are worth it

Survey Topics Could Include

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- Students' educational and career objectives
- Ratings of their experience at your institution
- Reasons for leaving
- Comparisons between your institution and their new college or university
- Impact of participation in extra-curricular activities
- Financial issues

Benchmarking

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Private	Tuition & Fees 2009-10 (in-state)	Tuition & Fees 2009-10 (out-of-state)	% Living on Campus	2008 % Pell Eligible	Average 2004-2007 Freshman Retention Rate	Average Graduation Rate	Fall 2008 Accept Rate	Fall 2008 SAT 25-75%	U.S. News Ranking 2010 (America's Best Colleges)
College A	\$30,100	\$30,100	80%	23%	61.8%	36.0%	61.6%	780-1030	Univ-Master's (South), Tier 3
College B	\$20,300	\$20,300	75%	28%	62.2%	42.3%	44.7%	910-1110	National Universities, Tier 4
College C	\$26,400	\$26,400	78%	45%	62.7%	41.0%	61.5%	860-1040	National Universities, Tier 4
College D	\$22,482	\$22,482	82%	29%	74.2%	55.0%	49.0%	1000-1170	Univ-Master's (South), Tier 1/2/3
College E	\$32,104	\$32,104	87%	29%	78.5%	61.0%	66.1%	1020-1225	Liberal Arts Colleges, Tier 3
College F	\$36,220	\$36,220	79%	25%	85.0%	67.3%	53.2%	1110-1300	Univ-Master's (South), Tier 1/1
College G	\$36,188	\$36,188	85%	25%	89.8%	74.3%	38.6%	1190-1380	National Universities, Tier 1/50

Interviews and Focus Groups

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- Conduct interviews and focus groups
 - What are the profiles of students who persist versus attrit?
 - Is there a feedback loop between retention/recruitment functions?
 - Is there a gap between image and reality?
 - What are the strengths/weaknesses of the educational experience?
 - How can campuses improve academics, scheduling, student life, student services?
 - Do undergraduates believe that University X is worth the cost?

Putting it All Together

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- Triangulate findings from old and new research
- Develop recommendations grounded in empirical data and best practices
- Model solutions/best practices
- Conduct pilot programs
- Continuous improvement

Early Warning Signs

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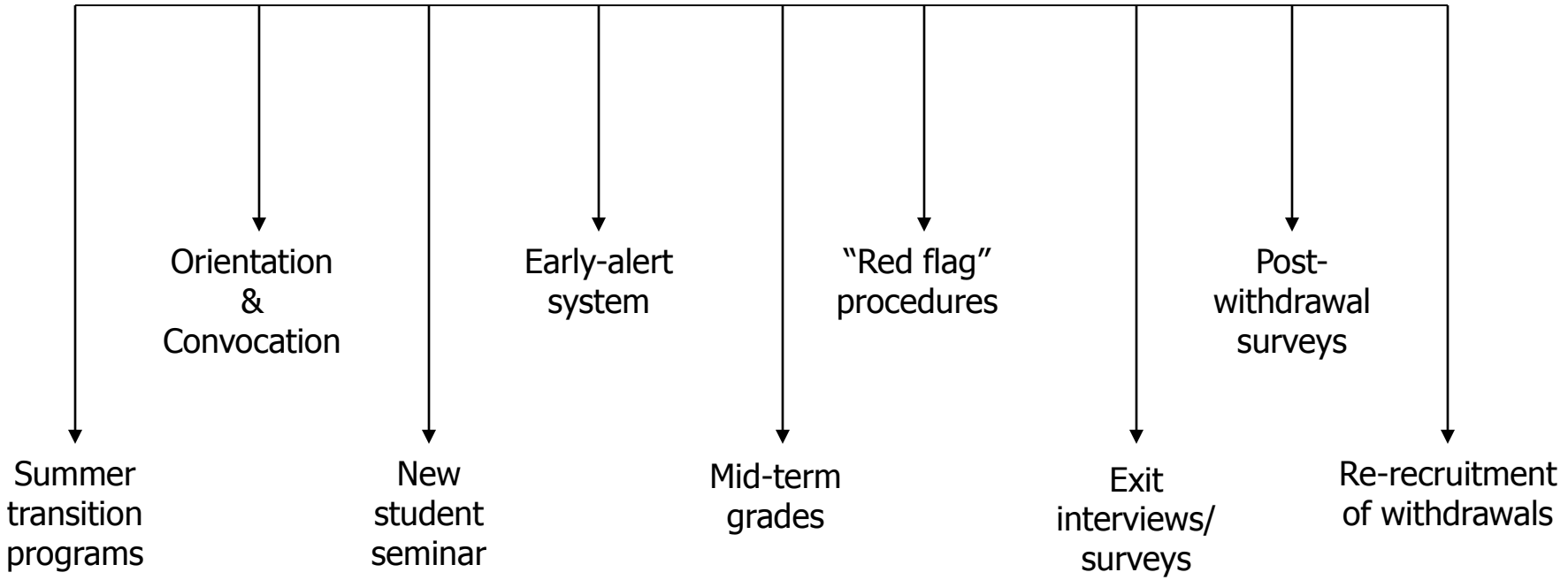
- First step is to develop the “at risk” list or profile
- Second step is to have “safety net” services to offer
 - Early attendance or progress checks
 - Academic support services and career advising
 - Peer-to-peer mentoring
 - Mandatory study halls

Early Warning Systems: Retention-Intervention Timeline

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PROACTIVE

REACTIVE



Source: Dr. Joseph Cuseo, Associate Professor of Psychology
Marymount College, Palos Verdes, CA

How Do We Know What Interventions Are Working?

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- Capture participation data and then compare retention of participants and non-participants.
- Conduct more detailed analysis of subpopulations.
- Conduct pilot programs.

Building Connections

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- Orientation
- Campus employment
- Advising
- Linked courses and Freshman Interest Groups
- Finding an academic home - undeclared

Other Strategies

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- Improved collaboration and communication between academic affairs and student development
- Improved integration of academic advising, career counseling, and student transactional services
- Access to online self-service tools/portals
- More institutional research/data mining/measurement

- Appointment Director of Outcomes Assessment
- Appointment of an Associate Provost with primary responsibility for retention
- Curricular initiatives (General Education)
- Holistic models of student development/success

Conclusion/Lessons Learned

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- Although retention is everyone's responsibility, someone needs to be in charge
- Conduct pilot programs
- Feedback loops and measurable goals are critical
- Survey tools → table analysis → Predictive modeling
- Retention = Early identification + (Early + Intensive + Continuous) Intervention - Seidman

Questions / Discussion

Contact Us

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