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Towards a Tool for Measuring Student Role Mastery

by

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Towards a Tool for Measuring Student Role Mastery

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Abstract

The role of “college student” is an uncertain one for all freshmen, but some students come into the education system not sharing the common understanding of how to best enact that role. This study will look at new ways of measuring expertise in, and mastery of the role of college student. I will explore the possibility of using Cultural Consensus as a measuring rod of how well entering students understand this role. Finding such a tool can be of use both in predicting success and in developing specific interventions for those who might otherwise drop out of school.

Introduction

Do all students begin the college experience with the same level of understanding of how to what it takes to be a successful student? Are there groups of students who are less able to make the transition from high school to college smoothly? These questions are the driving force behind this study. Pierre (1973, 1977, 1984) uses the idea of cultural capital to describe how culture reproduces itself and transmits its dominant values from one generation to the next. Much of his work has focused on the application of cultural capital to the system of education. A person’s level of access to cultural capital determines their ability to access and make practical use of the common knowledge of a culture. The goal of this study is to find a reasonable tool that can measure the level of access to this “common knowledge” and begin to enable intervention programs designed to help at-risk students.

As a group, college students present a wide array of diversity. What they do all have in common is some level of desire to attain a college degree. Many, however, do not finish their program and often not even their first year. At both public and

private colleges and universities across the nation, attrition rates have been increasing (Postsecondary Education Opportunity, 2002), with students most likely to drop out during the 1st year (Consortium for Student Retention Data Exchange, 1999; American College Testing, 2001). A National Center for Education Statistics report noted that even after controlling for socioeconomic status, institution types, and attendance rates, first-generation students (those with at least one parent who completed a four-year degree) demonstrated lower retention rates (73%) than traditional students (90%). Overall, 16 percent of those who began their postsecondary education in a 4-year institution in 1989–90 left before their second year—that is, they either dropped out for at least 4 months during their first year or failed to return for their second year “First generation students were about twice as likely as those whose parents had bachelor’s degrees to do so (23 versus 10 percent). (U.S. Department of Education, 2001) With these alarming numbers it is vital that any and all possible explanations be explored. Existing studies have credited the lower levels of success for some students to lack of familial economic and emotional support (London, 1989), or lack of ambition and doubts as to their academic abilities (Mitchell, 1997). We believe that none of these studies has yet satisfactorily answered the deeper question of kinds of differences exist in the students understanding of themselves as a student at the onset of the higher education experience between those who do succeed and those who drop out early.

Tinto, (1975, 1993) in one of the most familiar studies of college retention has suggested that there are a number of “tools” with which every student enters into the educational system. The level of access to which that individual has usable access to those tools might turn out to be one of the largest determinants of success.

Again, what is lacking is a way of measuring an individual student's pre-enrollment level of expertise of the role of college student.

Background

“Students today are different from their counterparts of three or four decades ago. Women have outnumbered men for more than 15 years, and the participation rates for members of historically underrepresented groups have made impressive gains. Many of these “new” students are the first in their families to attend college.” (Pike & Kuh, 2005) This changing face of higher education brings with it the added challenge of making sure that everyone who has the desire to succeed has access to the tools necessary for success.

National interventions, such as the TRIO family of programs, as well as school specific programs have begun to help these “new” students. Specific programs for students of color, transfer students, first-generation students, students with disabilities, and low income students, to name a few are beginning to understand that with a little additional guidance, success rates of at-risk students can be improved. While not always acknowledging the theoretical foundation of their programs, most put a primary focus on teaching the student how to best enact the role of “college student.”

A “role” is the collection of expected behaviors, attitudes and actions to which an individual is expected to adhere. But, as described in the “Differentiated Model of Identity” (Collier, 2000, 2001) there are multiple, alternative conceptions of the student role and each individual will differ in his/her ability to both recognize and act on these different versions of the student role. Students coming from rural or agricultural communities might see the role of college student differently than

those coming from urban settings, first-generation students will have a different idea of what it means to “do” student than those who grew up in an environment where multiple interactional strategies were passed on from parents with higher levels of education themselves. While this research will not specifically address all of the possible variations that exist in pre-entrance role perceptions the idea that understanding how to become an expert student is not equally distributed is the foundation of this work.

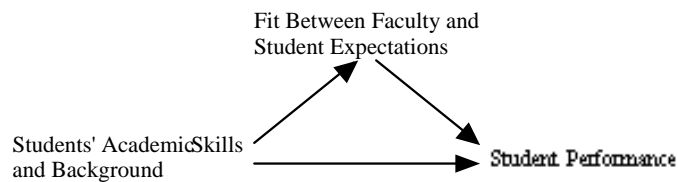
Role Mastery/Expertise

Mastery of the student role (i.e. “Shared Cultural Knowledge” about successfully enacting the college student role) increases the student’s ability to successfully navigate the educational system. There are many pre-college factors that can have an impact on this level of expertise at the onset of a college career. Many times, parents who are college educated will be able to share this cultural knowledge with their children. This transfer of role related knowledge is consistent with research showing that differences in the levels of parental education are a major indicator of first year college student academic success. Tinto (1998) also suggests that included in the “package” of pre-enrollment attributes that would indicate a higher chance of success are factors such as previous schooling and family support. This study explores the creation of a measurement tool which can be used to determine the level of access to “common” knowledge as a predictor of first year success.

One key to student success has to do with the degree to which individuals enact the role of college student “appropriately”, which requires students to understand their part in the academic world. Collier and Morgan (2002) have described one role that students are

required to navigate, as the “Fit Between Faculty and Student Expectations” (figure 1) for students’ skills and behavior, in a conceptual model with three distinct elements:

Figure One



They show how students’ skills and behaviors mediate the relationship between students’ academic skills and their academic performances. In a pilot study (Collier and Morgan, 2002) demonstrated that, controlling for academic skill levels, students who have a better understanding of these faculty expectations for student roles (class-related skills and behaviors such as understanding the syllabus, identifying course-related secondary skills, and amount of time spent on coursework) get better grades. It was found that first-generation students’ academic performances were most affected by these expectation variables.

The degree to which students understand and respond appropriately to professors’ expectations that fall outside the academic content of the course can be thought of as their respective levels of college student role mastery.

The measure that this study is looking to create will be used to assess students’ relative knowledge of specific versions of the student role.

Role Mastery as Cultural Capital

Pierre Bourdieu describes three types of capital with which we all purchase our place in our communities. Economic capital: the real access to economic resources. Social capital:

those things available to us as a result of belonging to specific groups which give individuals access to networks of support. And the less tangible, cultural capital: forms of knowledge, education, ability or any advantage a person has which would give them a higher status in society (Bourdieu, 1984). He further breaks down cultural capital into three forms.

Embodied: long-lasting dispositions of mind and body, character and way of thinking.

Objectified: cultural goods (pictures, books, dictionaries, instruments, machines, etc.)

Institutionalized: things such as college degree, whose trade value can be best measured by their relationship to the labor market

Parents provide children with cultural capital, the attitudes and knowledge that makes the educational system a comfortable place in which they can succeed easily, or one where they feel isolated and out of place. This in addition to the accumulation of their life experiences; family educational background, employment, primary and secondary education, and many other variables contribute to a wide array of pre-enrollment understandings (and misunderstandings) of the role of college student. Seen this way, mastery of the role of college student is one manifestation of embodied cultural capital.

Cultural Consensus

Up to this time there has been no valid way to show how much of a group's shared cultural knowledge that any one individual student has usable access to, but the Cultural Consensus model may provide not only an understanding of the "common knowledge" of those in the role of "student", but also a way of measuring each individual student's level of participation within that cultural role.

In this study we have drawn upon a measure from Anthropology – Romney et al.'s (1986) "Cultural Consensus Model." The approach measures sets of beliefs and practices to determine the extent to which a group shares a common understanding of those topics.

When the group does exhibit such consensus, the technique then examines the extent to which each group member shares this common understanding. In particular, it assigns each group member a score on “expertise,” which assesses the extent to which that person’s responses match the overall group consensus.

Methods

The basic research design uses measurements from 292 incoming Portland State University freshmen prior to the start of the 2004-2005 school year.

Setting

Data was collected from entering freshmen at the Portland State University (PSU) new student orientation in July of 2005. PSU is an urban college in Portland, Oregon with 24,222 enrolled during the 2004-2005 school year.

Questionnaire Development

Previous research collected information on the perceived differences between college and high school in the form of free-write lists. Each informant was asked what they felt were going to be the biggest differences between high school and college. The resulting statements were aggregated to get 16 common perceived differences. This study asked the students to rank order the 16 items during summer orientation, prior to starting their first year of college

Informant Selection

In order to get a baseline understanding of the pre-enrollment levels of expertise, the survey was administered to students during the orientation session prior to their first year of college. Participation was voluntary and uncompensated. Of the students attending this orientation session for entering freshmen for the 2004-2005 school year 292 students chose to complete the survey.

Data Analysis

To see if there was any specific “shared knowledge” among these informants, these results were analyzed with consensus analysis. As Romney et al. (1986) point out, there are a number of things that this procedure accomplishes. First, it helps to determine the level of homogeneity within the group as a whole. This approach is similar to factor analysis, in which “items” in a questionnaire are grouped on the basis of some underlying structure. In consensus analysis, instead of grouping by items, the analysis transposes the data and creates groups based on individuals. The consensus model may only be useful when the initial factoring indicates that there is a high probability that there exists only one (or one primary) factor linking all of the respondents

Second, the consensus model measures each individual’s level of cultural knowledge. For measuring students’ level of role mastery, this will produce a competency score that should indicate the degree to which one particular student is able to enact the role of student, as compared to the other students in the study. These competency scores will then be compared against the results of the first year of college of each individual to determine whether this measure can adequately predict success. First term GPA, first year GPA and cumulative credits taken are used for this analysis.

In addition to cultural consensus, our analysis will look for additional contributing demographic factors that may influence academic success. One of the areas of the analysis of student retention that has received much attention is that of first-generation students, students for whom neither parent had achieved a college degree by the time they were 18 years old. We also compare the groups of traditional and first generation students to examine whether role mastery, in the form

of shared cultural knowledge has more effect on the success of one group or the other.

Results

Because our primary concern was in the level of consensus between informants versus the questions themselves, a factor analysis was run using the informants as unique cases. In order to conduct later comparisons, only informants for whom we had GPA, and cumulative credits taken were used ($n=151$). Principal components analysis constructs a small set of variables (factors) from the additive combinations of existing similarities among variables. Each resulting factor identifies the existence of some unknown variable which lies at the intersection of the observed similarities among the variables measured. The size of that intersection tells us how important that factor is. Factor loadings measure the size of the intersection. The first factor identifies the largest shared intersection among the variables.

Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	48.270	31.967	31.967
2	14.723	9.750	41.718
3	11.717	7.759	49.477
4	11.158	7.389	56.866

5	9.416	6.235	63.101
6	8.482	5.617	68.719
7	7.773	5.147	73.866
8	7.085	4.692	78.558
9	6.590	4.364	82.922
10	5.716	3.785	86.708
11	5.464	3.619	90.327
12	4.679	3.099	93.425
13	3.858	2.555	95.980
14	3.574	2.367	98.347
15	2.496	1.653	100.000

Components 16-151 represented less than one percent of cumulative variance

Extraction Method: Principal Component Analysis.

Table 1. Principal Component Analysis

The second factor shows the largest intersection of the variables that remain after accounting for the first factor. Informants rank order of the 16 questions of differences between high school and college were coded 1-4 with “4” representing the quadrant perceived to have the greatest difference

. Figure 1 shows the scree plot from a principal components analysis of the resulting 151*151 informant matrix. The first factor’s eigenvalue (the sum of squared loadings) was 48.27, a little more than three times than that of the second factor.

The three times rule is the minimum difference if a single valid factor can be said to exist to explain a set of data. Table 1 shows the eigenvalues for the first 16 factors

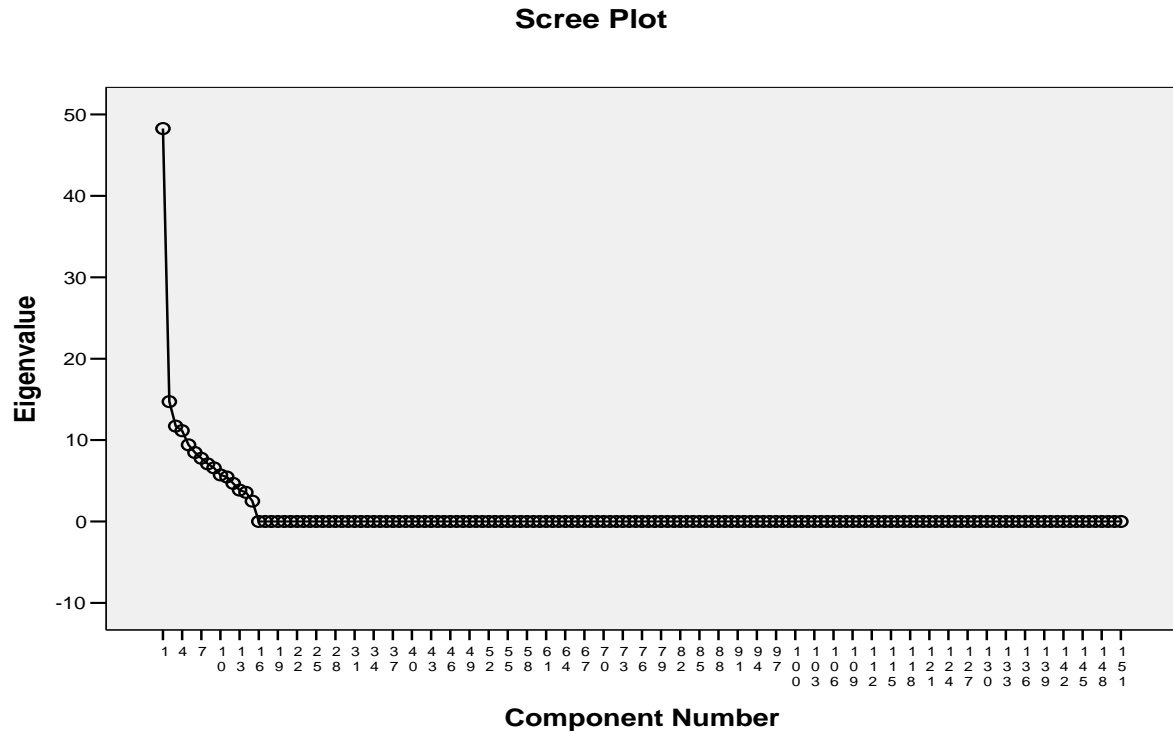


Figure 2. Scatter Plot of Eigenvalue by Component

While the principal components analysis suggests that there is likely one factor that explains most of the differences between the answers of the respondents, it is not immediately clear what that difference is. Each informant is given a loading score of the first factor based on how strongly the individual's knowledge is, compared to the composite knowledge of the entire group. The average informant competence was .0527 with a range of .026 to .891.

Having met the minimum requirements to suggest that there is some shared understanding of the role of student, we tested our prediction that first-generation students would have lower levels of consensus on the loadings on factor one.

Correlations, First-Generation and Factor 1 Loading

		loading	FSTGE N1
loading	Pearson	1	.051
	Correlation		
	Sig. (2-tailed)		.541
	N	151	147
	Pearson	.051	1
	Correlation		
	Sig. (2-tailed)	.541	
	N	147	147

The other variable we would have expected to reflect in the consensus scores was level of success during this first year. However, grades were not found to be strongly impacted by the consensus value. Correlations of FallGPA and factor loading showed a weak negative ($r = -0.022$) relationship.

Correlations, Fall GPA/Factor 1 Loading

		loading	Fall04GP A
loading	Pearson	1	-.022

Fall04GPA	Correlation		
	Sig. (2-tailed)		.785
	N	151	150
	Pearson		
	Correlation	-.022	1
	Sig. (2-tailed)	.785	
	N	150	150

Correlations of Cumulative GPA for the year and factor loading again showed a weak relationship ($r = 0.009$).

Correlations, Cumulative GPA/Factor 1 Loading

		loading	Cum GPA
loading	Pearson		
	Correlation	1	.009
	Sig. (2-tailed)		.909
	N	151	151
CumGPA	Pearson		
	Correlation	.009	1
	Sig. (2-tailed)	.909	
	N	151	151

Additional correlations showed no significant relationship between the factor loading and any of the other variables that were gathered in this survey.

Discussion

While it would have been nice to have found the “holy grail”, which would have evened out the playing field for all at-risk students on the first attempt, this research does bring us closer to developing a reasonable tool for use in predicting future success.

In assessing this project in terms of its future applicability and usefulness in leveling the playing field for students potentially at risk of falling through the cracks, careful reevaluation of all aspects of the research is important.

The research question itself is still one that deserves the close attention of empirical research. Data, both governmental and research driven, show clearly that there are students for whom the assumptions about how to “do” student are not clear. By creating a measurement tool that can predict the incoming level of role mastery, interventions can be put in place at both the high school level and the college level to create equal opportunities for success.

The theoretical foundations of the project appear to be sound as well. Combining the ideas of cultural capital as resource, with role mastery/expertise draws the focus away from individual deficits and concentrates, instead, on the commonalities that exist for this group of students.

The methodology is the most problematic aspect of this research. The Cultural Consensus model has been used with much success in the field of anthropology for almost two decades. It’s ability to draw out answers from a

population when the answers are not known ahead of time has provided rich results in many applications and it has been adapted for use in other fields such as political science, and psychology. However, some of its basic assumptions make it a challenge to apply to this research. Namely, that the group that is being studied are all members of a cohesive culture. It will be important in future iterations of this study that the surveys are broad enough to find one distinguishing groups of students who lack usable access to some set of cultural tools. Once a general survey has been validated other sub-studies will be able to use this as a starting point to explore additional needs of specific groups (i.e. Immigrant, first-generation, community college transfer, adult returning).

When the research question, theoretical foundations and methodological framework all appear to be sound, all that remains to question is the data itself. There are two primary concerns with this data set. First, does it measure what we intended it to? The fact that there was one primary factor found that explained the majority of the variance among the respondents suggests that while this study did find something, the demographic data gathered missed some crucial variable.

Secondly, does the population adequately represent the pool of students? It needs to be acknowledged that the students that participated in this study may well have not been a good cross-section of the entering student body. Not all students choose to go through the orientation; those that do might be exhibiting a stronger understanding of the role of student. Of those students that did attend the orientation, not all chose to participate in the study. Again, it is possible that recognizing the value of participation and taking the initiative to actually complete

the survey would show a higher level of expertise than those who passed up the opportunity to participate.

Efforts are already under way for both fine-tuning the survey tool and broadening the sample to be more representative of the entering student body. Future measures will include additional demographic variables that I feel might make the study more robust might include; rigor of high school, work history, ethnic and immigrant status, age

In all, this preliminary exploration into the possibility of finding a way of assessing the level of which an individual has access to the shared cultural knowledge regarding how to enact the role of student has shown that such a tool can be created. Once found, this measure will have practical use in informing educational administrators in their attempts to create environments where every student has a chance at completing their education. Interventions could then be created along

Once an acceptable measure is created that accurately describes the incoming level of an individuals level of expertise, longitudinal application of this measure will help us understand better the process of how some students are able to assimilate into the college culture and show us what areas are the most difficult to understand. Specific interventions can then be put in place to address those areas in order to improve retention rates among at-risk populations.

Current programs have already identified, communicating with professors, understanding the syllabus, classroom behavior, and time management and areas where first-generation students will benefit from early intervention. Tailor fitting a program to the unique needs specific groups of learners can be greatly enhanced with the use of a measure such as explored in this study.

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Appendix 1 – Instrument

Questions to be rank-ordered 1-4 with four in each category as related to;
“Most important differences between high school and college in regards to earning good grades.” (Collier, Morgan & Cress 2004)

1. College requires students to take more responsibility for getting their work done
2. In college, students get less individual attention from teachers
3. College requires more writing and papers
4. In college, there is more emphasis on group work
5. In college, it is up to students to get help if they are having problems
6. College requires taking good notes
7. In college, courses move at a faster pace
8. College requires more work outside class
9. In college, grades depend more on tests
10. In College, teachers take class time more seriously
11. In, college, there is less opportunity for extra credit
12. College requires more reading
13. College requires students to organize their time more effectively
14. In college, you choose whether to attend class
15. In college, there is ore emphasis on critical thinking
16. College requires students to do more work independently