

Getting a Head Start on Transfer Shock at a Newly Established Engineering College

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WIP: Getting a Head Start on Transfer Shock at a Newly Established Engineering College

Abstract

In their pursuit for a bachelor's degree in engineering, some students use a transfer pathway from a two-year college to a four-year institution. Prior research on transfer students focuses on the challenges these students face during this transition, often referred to as "transfer shock," and the differences between student experiences during their tenure at the two institutions (e.g., involvement in extracurricular activities; contact with faculty; academic advising/counseling services). This research has been instrumental in highlighting the challenges of adapting to the realities and expectations of four-year institutions and have informed programs that are built with the intention of easing this transition and adjustment to the new institution's climate and culture. Our research builds on this prior work by focusing on the assets, specifically strengths and resources, that transfer students bring to four-year institutions, and how the new institution can foster these assets for not only an easier transition, but to build confidence and integration in the new community. We examine two research questions: i) What assets (i.e., strengths and resources) do transfer students bring with them to four-year institutions? And, ii) To what extent do students recognize these assets as relevant during and after their transition period? Since its establishment in 2012, the College of Engineering at the University of Georgia has increased in enrollment from 200 to over 2,100 undergraduate students. Approximately 20% of these students transfer into the second or third year from one of the state colleges in our state. In order to create a shared understanding of the assets that transfer students bring to our institution, two faculty worked closely with two undergraduate students and one adviser. Data collection involved guided reflection writing by the two students and adviser on topics as informed by the theoretical framework. These reflections bring to light some psychological, social, cognitive, and environmental resources that students in transition can draw on to maximize success and minimize the transfer shock phenomenon.

Introduction

Transfer students and their transitions to four-year institutions from two-year/community colleges has been the focus of many investigations and programs. Research has shown that during the first semester, transfer students go through a period of adjustment. Investigation into these transitions has brought to light the reality of "transfer shock" [1] and its consequences for transfer students on multiple levels: personal, social, and academic. In recent years, research has focused on the complexity of such factors, like background, prior educational experiences, the transfer process, social adjustment, and academic progress, to reduce transfer shock [2-6]. These studies have utilized diverse methodological and analytic approaches, from institutional data, quantitative analysis of survey responses, to more recently some qualitative analysis of focus groups and open-ended questions. These results create a picture of the barriers to a successful transfer, thus giving rise to a deficit-based approach. This research has catalyzed many programs, mostly at four-year institutions, to ease transfer students into the life and expectations at their new school [7-9]. Only a few researchers have considered the social and cultural capital that transfer students bring to their transition [10]. Specifically, Mobley (2016) [11] and Laanan (2010) [2] drew on Bourdieu's [12] theory of cultural and social capital to examine the multiple types of capital students rely on for their transfer receptivity but focused on the differences between the two campuses. However, no in-depth analysis was produced beyond that transfer students know the factors that would help them adjust: feeling of belonging and fitting in, network, and use of institutional resources.

In this study, we use an asset-based approach to transfer students' experiences in their first semester at the new institution to answer two research questions:

1. What assets (i.e., strengths and resources) do transfer students bring with them to four-year institutions? And,
2. To what extent do students recognize these assets as relevant during and after their transition period?

We suggest that using an asset-based approach to helping transfer students will further enhance the knowledge gained from primarily deficit-based investigations of transfer experiences. We envision that identifying strengths and resources will enable transfer students, and the old and new institutions, to more effectively work together and enable students to use these assets to reach their career goals.

Theoretical Framework: Asset-Based Approach

In the last decade, there has been a shift in research regarding human behavior from a deficit-oriented model to a more positive model, that of a more strength-orientated perspective, in areas that include education and school counseling [13]. For example, Samuelson (2016) [14] used an asset-based approach to understand the experiences of underrepresented students, African American and Latino students, in their engineering studies with Community Cultural Wealth as the theoretical framework. This framework focuses on four types of capital: aspirational, familial, navigational, and resistant. Mobley (2018) [15] added the experiential capital described by O'Shea [16] to this framework to gain insight into the perception and experiences of students with three identifiers: first-generation students, transfer students from community colleges, and engineering major. The qualitative analysis of these targeted studies involved iterative questioning including open-ended questions. From the interviews with the students, the authors conclude that transfer students can activate different forms of capital to surmount the challenges they encountered during their period of adjustment.

In our investigation, we define strengths as "pre-existing qualities that arise naturally, feel authentic (and) are intrinsically motivating to use" [17]. These characteristics are of an intrapersonal nature, such as: future dreams and hopes, growth mindset, accountability, taking responsibility for own actions, perseverance, prior experiences. The resources available to transfer students can be of different capital: familial, social, institutional. We seek to understand what are the assets (i.e., strengths and resources) transfer students have at their disposal in the context of our college to better serve them in their transition and challenges associated with it.

Methodology and Methods

Context

The College of Engineering at a [name of institution] was founded in 2012. In the last six years, the number of enrollments has increased from 200 to 2,200 students in Fall 2018. Over 20% of these students are identified as transfer students. In Georgia, the majority of transfer students come

from other four-year, in-state colleges that do not have fully developed engineering programs. These students have to navigate the transfer process, which includes a transition to a larger campus, and typically a change in major to engineering, amongst other adjustments. The research team for this study includes two students who had to navigate such a transition (second and third authors), a lecturer (first author), a research scientist (fourth author), and a student advisor (last author). One student is an African American male student in Civil Engineering, involved with NSBE (National Society of Black Engineers). The other student is a white female who transitioned to Biomedical Engineering as a junior. The lecturer started at this university one and a half years ago, and from her conversations with her students noticed the need for exploration of transfer students' challenges. The adviser has worked with engineering students for three years and has seen how challenges for transfer students have evolved during her time with the college. The research scientist is the Associate Director for Research Initiation in the institute for engineering education associated with our college.

Collaborative inquiry

We are using a collaborative inquiry approach to investigate the strengths and resources transfer students at our college have in their toolbox to negotiate the challenges associated with the first semester of transfer. Collaborative inquiry “involves two or more people researching a topic through their own experience of it, using a series of cycles in which they move between this experience and reflecting together on it” [18]. The cycles include observation of own experiences, reflection, sense making of those experiences, and action [19]. For this study, we included another layer in this cycle, a research experience for the student participants. Through this component of the project, the students are not just the subjects, but they also work closely with two faculty members to learn to conduct educational research and have a voice in the design of the study.

This collaborative inquiry grew out of a College-level *Research Initiation* grant, which provided funds to engage the lecturer and two undergraduate students in educational research. Over the course of the fall semester in 2018, the research team (except for the advisor) met weekly to discuss prior literature on transfer student experiences and efforts to ease their transitions. Through this engagement with the literature, the group decided to adopt an assets-based framework for their investigation. The team then read relevant articles that described this approach. For the students, finding and engaging with relevant theory and prior work served to (i) prompt and sharpen observations of their own experience, (ii) contextualize their experiences as part of the transition process and not internalize them to their academic detriment, and (iii) identify potentially transferable insights that could be of relevance beyond their own specific experiences.

At the same time, the two students keep a diary of critical incidents [20] they deemed to be representative and salient to their transfer experiences. The critical incidents for one of the students were brought to the weekly meetings throughout the fall semester, wherein the research team sought to make sense of her experiences through the assets-based framework. These discussions often resulted in more questions, which the student used to add more detail to her accounts. The second student kept a written diary of his critical incidents, which he typed up and shared with the research team at the end of the fall semester. The research team then met at the beginning of the spring semester to discuss the two sets of critical incidents. At first glance, the discussions on the critical incidents highlighted the struggles and the deficits that acted as impediments to a successful

semester. By shifting to an assets perspective, the research team (students, faculty and adviser) were able to identify strengths and resources the students drew on in their experiences. In the course of the weekly meetings, the team observed that the assets-based framework revealed dramatically different results to what a deficit-based framework would. In this paper, we report preliminary findings from this collaborative inquiry to highlight the differences between applying these two lenses to transfer student experiences.

First, we present excerpts from the students' written accounts. Then we share findings from our assets-based and deficit-based interpretations of these experiences (Table 1).

Excerpts from the raw data

First entries by Author X

10/09/2018: *I see myself being faced with very confusing times while getting accustomed to the campus. While I'm almost comfortable enough to talk to others I also shy away from drawing too much attention to myself. I lost my way coming from [Engineering Building] to go to [Student Center] and now I'm convinced that as soon as I felt I knew the campus it got way more confusing. Classes are not too bad yet, I have time to read ahead and sometimes go to the gym in the evenings. I'm a [sic] very satisfied with the schedule I picked except for my late afternoon lab. Essentially this is a lesson learned, pick classes on time or this happens.*

10/15/2018: *I started to prepare for my first test in design and graphics weeks in advance. Did all the practice problems and then some. It turns out she is a very honest teacher and if she tells you what she wants you to know she will put that on the test. This is not the same as everyone else describes. I have heard times get rough in the upper level classes. Even when you prepare ahead of time the tests may still be a doozy. This is off putting but I have confidence in the fact that if I give it good effort my results will reflect how hard I tried. Although I feel like I did good on the AutoCAD test, I also took a biology test that was absolutely horrible. I'm not used to information heavy examination. It seemed like he wanted us to know everything in both the book and the powerpoints. The blame falls on me for underestimating biology and putting a lot of time to graphics. I plan to solve this by seeing the biology teacher for help. I wish to actually understand how to work through his purely conceptual tests.*

First entries by Author Y

Entry 1: *My old school, [name of prior university], had a campus that you could walk from any building to another within 10 minutes. At a campus the size of [current institution], it is very easy to get caught up in the "human traffic." Students at this school almost always have headphones in and appear as if they only care about themselves and where they are going. The ONLY thing that saved my life the first week of school was the [current institution] app that has the bus routes on them. I had never taken a bus to class, and the over-crowdedness was overwhelming. The*

app allows you to track ever [sic] route and estimates when the bus will arrive at your stop. (Also, it worries me for times of the year when everyone gets sick... lots of people on a bus = lots of germs). One of my strengths is that I am an extrovert, so I thrive off interactions with others. Some days I may go the entire day with only talking in person with around 4 people not including my roommates.

Entry 2: I came into UGA as a third year being an A/B student with only one C on my transcript. After my first round of tests, I failed everything single one. My study habits did not change whatsoever. I continued to do my work, I prioritized school over everything else, yet I did not perform to the level I am used to. To say the least, it was very discouraging. After this time, I did what many students do, and called my mom crying. I was so upset because I spent so much time studying and had no reward. She did not know what to tell me, but reminded me that it would be okay and I would learn how to adjust and do better. After calling my step-mom, I confessed how scared I was to lose my scholarship because I knew I needed to keep it in order to go to school here loan-free. My stepmother assured me that if I drop from Zell to HOPE (scholarship) that it would be okay, and my family could "make do." This gave me relief, but I didn't use this as an excuse to perform poorly in my future school work.

Analysis

Reading the students' entries, the research team identified elements that could be constructed as deficits and elements that could be constructed as assets. Table 1 contains extracts from students' critical incidents as interpreted through both lenses. The "Barrier" column labels a deficit highlighted in the student entry, while the "Asset" column aims to identify the strengths and resources in the same entries. These findings came to light during the collaborative inquiry sessions. Therefore, students recognized the relevance of the assets they were writing about all along in the course of the semester, even if the surface layers were deficits.

Looking at the two experiences, the research team identified components in the deficit-based and asset-based approach. If we look only through the deficit-based approach, the university can develop programs that address these deficits, however, using an assets-based lens, we can identify transfer student's strengths and resources that will help them improve their performance and balance their life. For example, one might interpret poor initial grades as lack of preparedness for coursework at the four-year institution. Such an interpretation might lead to interventions that seek to address this deficit. The same poor grades, however, could also be leveraged as an opportunity for students to draw on and further develop their help-seeking skills, or to reflect on the growth mindset that likely enabled them to enroll in the four-year institution in the first place. The analysis also informed the research team that while students may undergo similar experiences, they may draw on different resources to succeed (including university programs) and that is one of the most important aspects of an asset-based approach. For example, when faced with poor exam results, Student A reflected on what went wrong and what they could do to succeed next time; while Student B turned to family for emotional support. These assets could be further categorized as psychological, social, cognitive, and environmental capital, but more in-depth analysis is necessary.

Table 1: Analysis of entries from the two perspectives.

Barrier	Deficit Entry	Asset	Asset Entry
Unfamiliar campus environment	Student B: My old school, [name of prior university], had a campus that you could walk from any building to another within 10 minutes... At a campus the size of [current institution], it is very easy to get caught up in the “human traffic.”	Individual Research, Online resources	Student B: The ONLY thing that saved my life the first week of school was the [current institution] app that has the bus routes on them. I had never taken a bus to class, and the over-crowdedness was overwhelming. The app allows you to track ever [sic] route and estimates when the bus will arrive at your stop.
Unfamiliar systems		Agency in picking of schedule; growth mindset	Student B: I'm a very satisfied with the schedule I picked except for my late afternoon lab. Essentially this is a lesson learned, pick classes on time or this happens.
Lack of preparedness for coursework	Student A: I also took a biology test that was absolutely horrible	Accountability; time management, help-seeking; growth mindset	Student A: The blame falls on me for underestimating biology and putting a lot of time to graphics. I plan to solve this by seeing the biology teacher for help. I wish to actually understand how to work through his purely conceptual tests.
	Student B: I came into UGA as a third year being an A/B student with only one C on my transcript. After my first round of tests, I failed everything single one.	Family support	Student B: After this time, I did what many students do, and called my mom crying.
Preparedness for upper level coursework		Determination to succeed; thinking ahead	Student A: I have heard times get rough in the upper level classes. Even when you prepare ahead of time the tests may still be a doozy. This is off putting but I have confidence in the fact that if I give it good effort my results will reflect how hard I tried.

Discussion and Conclusions

Transitions and changes in academic pathways are wrought with ups and downs. Transfer students comprise a high percentage of students in our new college. The purpose of this study is to understand the experience that our students have and how their experience compares to prior studies. Therefore, this study is the beginning of getting ahead of how we serve our transfer students, before an unhealthy culture is established. We draw our analysis as a comparison of the deficit-based and asset-based approach of students’ free writing of critical incidents at their new school. The two students that participated in this study had similar experiences, but also drew on different assets (i.e., resources and strengths). We were able to find answers to our research questions. Students have assets that can they use during their transfer, such as: a growth mindset, family, and study habits. Some of these assets are well-recognized, while others were not as obvious.

Involving students in the collaborative inquiry is a benefit to the students because they have the opportunity to reflect in a safe environment on their experiences as transfer students. The collaborative inquiry includes elements of shared sense-making and decision making that is hoped to enable students to discover the assets they bring with them from the former institution, thus enabling them to better navigate the challenges they may be experiencing.

Further analysis of the critical incidents on the first two semesters is needed in order to identify additional assets that transfer students bring with them to four-year institutions.

Future plans

This pilot study has shown that an asset-based approach to transfer students' experiences in a collaborative inquiry framework has merit and further investigation is necessary with more in-depth analysis and a larger population. We will expand the project to involve more students in a collaborative inquiry setting. This means that the students participating will be part of a group that involves sharing their experiences and making sense of them by focusing on the assets they can discover and explore. We will then explore how these assets might inform interventions that leverage students' existing strengths and resources.

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References

- [1] J. R. Hills, "Transfer shock: The academic performance of the junior college transfer," *The Journal of Experimental Education*, vol. 33, no. 3, pp. 201-215, 1965.
- [2] F. S. Laanan, D. Jackson, and M. Darrow, "Experiences of engineering transfer students: From community college to university," in *American Society for Engineering Education*, 2010: American Society for Engineering Education.
- [3] J. Laier, S. Steadman, and G. Jefferson, "Improving transfer student success," in *ASEE Annual Conference and Exposition, Indianapolis, Indiana*, 2014.
- [4] F. S. Laanan, S. S. Starobin, and L. E. Eggleston, "Adjustment of community college students at a four-year university: Role and relevance of transfer student capital for student retention," *Journal of College Student Retention: Research, Theory Practice*, vol. 12, no. 2, pp. 175-209, 2010.
- [5] C. S. Chin-Newman and S. T. Shaw, "The Anxiety of Change: How New Transfer Students Overcome Challenges," *Journal of College Admission*, no. 221, 2013.
- [6] M. Whitfield, "Transfer-student performance in upper-division chemistry courses: Implications for curricular reform and alignment," *Community College Journal of Research Practice*, vol. 29, no. 7, pp. 531-545, 2005.
- [7] B. K. Townsend and K. Wilson, "'A hand hold for a little bit': Factors facilitating the success of community college transfer students to a large research university," *Journal of College Student Development*, vol. 47, no. 4, pp. 439-456, 2006.

- [8] G. Townley *et al.*, "Exploring the role of sense of community in the undergraduate transfer student experience," *Journal of Community Psychology*, vol. 41, no. 3, pp. 277-290, 2013.
- [9] J. E. Fink, J. C. McShay, and P. Hernandez, "Supporting Vertical Transfer: The Role of a Student Union Learning Community," *Journal of Student Affairs Research Practice*, vol. 53, no. 1, pp. 65-77, 2016.
- [10] K. A. Davis, Andrea Ogilvie, and D. B. Knight, "Easing engineering transfer students' transitions: Recommendations from students who successfully navigated the transfer pathway," in *2017 ASEE Annual Conference & Exposition*, Columbus, Ohio, 2017: ASEE Conferences
- [11] C. Mobley, E. G. Shealy, and C. E. Brawner, "First-generation engineering transfer students: A qualitative study of social and cultural capital," in *Frontiers in Education Conference, 2013 IEEE*, 2013: IEEE, pp. 1651-1653.
- [12] P. Bourdieu, *The forms of capital Handbook of theory and research for the sociology of education (pp. 241–258)*. The Power Broker: Robert Moses the Fall of New York, 1986.
- [13] J. Galassi, *Strengths-based school counseling: Promoting student development and achievement*. Routledge, 2017.
- [14] C. C. Samuelson and E. Litzler, "Community cultural wealth: An assets-based approach to persistence of engineering students of color," *Journal of Engineering Education*, vol. 105, no. 1, pp. 93-117, 2016.
- [15] C. Mobley and C. E. Brawner, "'Life prepared me well for succeeding': The Enactment of Community Cultural Wealth, Experiential Capital, and Transfer Student Capital by First-Generation Engineering Transfer Students," *Community College Journal of Research Practice*, pp. 1-17, 2018.
- [16] S. E. O'Shea, "Navigating the knowledge sets of older learners: Exploring the concept of experiential capital amongst first-in-family mature age students.," *HE: Transforming lives through life-wide learning? (pp. 112-116)*, vol. The Open University., 2016.
- [17] I. Brdar and T. B. Kashdan, "Character strengths and well-being in Croatia: An empirical investigation of structure and correlates," *Journal of research in personality*, vol. 44, no. 1, pp. 151-154, 2010.
- [18] J. Heron, *Co-operative inquiry: Research into the human condition*. Sage, 1996.
- [19] N. W. Sochacka, J. Walther, and A. L. Pawley, "Ethical validation: Reframing research ethics in engineering education research to improve research quality," *Journal of Engineering Education*, vol. 107, no. 3, pp. 362-379, 2018.
- [20] S. Brookfield, "Using critical incidents to explore learners' assumptions," *Fostering critical reflection in adulthood: A guide to transformative and emancipatory learning*, pp. 177-193, 1990.