

Running Head: SKILLS AND COMPETENCIES

Why Do I Need to Know This?

Skills and Competencies from Institution to Workplace

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Abstract

Both students and institutions are increasingly concerned with ensuring that their academic investment results in future employability. Many different skills play an important role in students' appeal to prospective employers as well as their ability to craft a successful career. Utilizing data from the Strategic National Arts Alumni Project (SNAAP), exploratory and confirmatory factor analysis indicated that there are two distinct sets of skills, both in their development at the institution and importance in the workplace, among arts alumni: transferable skills and business-based skills. The results of Ordinary Least Squares (OLS) regression analyses predicting these two factors provide some relationships concerning institutional satisfaction, internship participation, gender, race, graduation cohort, income, graduate degree status, self-employment, professional artist status, and occupational field.

Why Do I Need to Know This? Skills and Competencies from the Institution to the Workplace

There is an increasing trend for requiring colleges and universities to show measures of their effectiveness (Kuh & Ewell, 2010), and one important means of assessing effectiveness in developing students' skills and competencies is through alumni surveys (Cabrera, Weerts, & Zulick, 2005). A major function of higher education is to help students develop skills that will lead them to success in the workplace (Evers, Rush, Berdorw, 1998; Stasz, 2001). While some acquired skills are considered discipline-specific, many of these "transferable skills," such as problem solving and effective communication, are applicable to a broad range of fields (Bradshaw, 1985; Kemp & Seagraves, 1995; Stasz, 1997). There is a need for generic skills across multiple types of jobs, and students possessing them appear more marketable to potential employers.

Institutions claim to prepare their students with a multitude of skills, ranging from effective communication practices to analytical and creative thinking skills, in addition to the content knowledge gained in a student's chosen major (Tait & Godfrey, 1999). Some research makes a distinction between transferable "soft skills" such as strategic thinking, communication, and creativity, and "hard business knowledge" concerning specific content, with evidence that employers desire both kinds of competencies (Andrews & Higson, 2008).

Because of the need to develop both soft skills and business skills, many higher education institutions have begun to scrutinize whether they are effectively teaching these skills in their curriculum. Arts programs in particular have been under fire for a lack of preparation in dealing with the "real world" of work, and it is often difficult to align some of the arts curriculum with rigid accountability standards that may not take into account the unique skills and experiences of arts students (Johnson, 2002). However, research indicates that students in the arts are especially

adept at certain types of skills, including incorporating verbal studio feedback into revisions of their work (Edstrom, 2008) and critical thinking and interpersonal understanding (Badcock, Pattison, & Harris, 2010). Yet despite these unique skill advantages, arts majors are also realistic about their potential employment prospects after graduation, often realizing the need to develop a variety of other skills, including teaching, to increase their likelihood of employment (Luftig et al., 2003). The current study utilizes information from an arts alumni survey to explore how various types of skills and competencies, and their relationships to other demographic, occupational, and institutional variables, can provide evidence of institutional effectiveness, as well as identify areas in which institutions may need programming or curricular improvements.

Method

Participants

The data used for this study were from the 2011 and 2012 administrations of the Strategic National Arts Alumni Project (SNAAP). SNAAP is a multi-institution online alumni survey designed to obtain knowledge of arts education. The participants were 65,837 alumni from 179 different arts high schools, undergraduate, and graduate colleges or arts programs within larger universities. All alumni from each institution were invited to participate. Of those who participated, 3,433 were high school alumni (5%), 48,489 undergraduate alumni (74%), and 13,915 graduate alumni (21%). Of these alumni, 39% were male, 60% female, and 0.2% transgender. The majority of alumni (84%) reported their ethnicity as Caucasian. The average institutional response rate was 18%.

Materials

The measures were questions included in a larger survey administered to participants online. Participants were emailed an invitation including a link to the survey. Participants could

log in multiple times, so they were not constrained to complete all questions during a single setting.

The measures of skills and competencies included a set of 16 items that asked participants about how much their institution helped them “acquire or develop each of the following skills and abilities” with a 4-point scale from “Not at all” to “Very much” and were then again given this same list of 16 items and asked to rate the importance to “perform effectively in your profession or work life” with a 4-point scale from “Not at all important” to “Very important.” See Appendix A for a complete list of the 16 items.

To determine the occupation in which participants spend a majority of their work time, they were shown a list of 45 different occupations, both arts-related and non-arts-related (see Appendix B). Respondents selected from the list all of the occupations they had ever worked, all of the occupations in which they currently work, and (if more than one current occupation) the one in which they spend a majority of their work time. There were also items about whether respondents had ever been self-employed or a professional artist.

Participants also answered items concerning demographic information (gender, age, race/ethnicity, income, etc.) and questions about their satisfaction with their institutional experience. Participants were asked to rate their overall institutional experience using a 4-point scale from “Poor” to “Excellent.” Other items inquired whether or not they had participated in an internship while pursuing their degree at the institution, and what additional degrees they had received outside of their institution.

Results & Discussion

Factor Analysis

The sample was randomly divided into two even sub-samples to conduct exploratory and confirmatory factor analysis of the 16 skills and competencies items. The results of the exploratory factor analysis using Principal Component Analysis extraction with oblique Promax rotation suggested a two-factor solution for each set of items (Tables 1 and 2). The two factors were tentatively named “Business-Based” and “Transferable” due to conceptual differences in the type of activities and settings of use for each skill described in the item. The six items that did not load on either of the factors (cutoff criteria of $<.40$) or did not allow the factors to be conceptually consistent across both sets were excluded from further analyses.

The confirmatory factor analysis, conducted with the second half of the sample, supported this solution. The two-factor solution showed good model fit for both the institutional and workplace sets ($\chi^2 = 70.76$ and $\chi^2 = 77.19$, respectively). Because traditional measures of model fit are sensitive to sample size, a variety of other fit indices were considered as well (Hu & Bentler, 1999). These fit indices also suggested good model fit (Table 3) and all path coefficients were significant. Therefore, scores for the latent variables of “Business-Based Skills” and “Transferable Skills” were created by averaging the scores for each item loading on the respective factors. These scores were created for the entire sample. There were acceptable levels of internal consistency (McMillan & Schumacher, 2001) for the institutional business-based (Cronbach’s $\alpha = .80$), institutional transferable (Cronbach’s $\alpha = .86$), workplace business-based (Cronbach’s $\alpha = .75$), and workplace transferable (Cronbach’s $\alpha = .81$) subscales.

Regression

After establishing these subscales for the institutional and workplace skills items, Ordinary Least Squares (OLS) regression analyses were used to explore the relationship between certain alumni characteristics and skills. For the institutional skills models, the characteristics of gender, race, cohort year, overall institutional satisfaction, and internship participation were entered as predictor variables, with each of the skills subscales as the outcome variable. As there are inherent differences in institutional experiences at the undergraduate and graduate level, separate models were run for alumni from each of these levels (high school level excluded due to low Ns). For the workplace skills models, the characteristics of gender, race, cohort year, ever working as an artist, ever being self-employed, discipline of field, income, having a graduate degree, and the corresponding institutional skills subscale were entered as predictor variables, with each of the skills subscales as the outcome variable. Gender (male/female), race (non-White/White), internship participation (no/yes), discipline of field (work outside of the arts/work in arts-related occupation), ever worked as a professional artist (no/yes), ever been self-employed (no/yes), and having a graduate degree (no/yes) were dichotomous and entered as dummy variables. Normal probability plots and residual analyses indicated no severe departures from the assumptions of independence, normality, homoscedasticity, and linearity. Variance inflation factors were checked for multicollinearity, which was not present in these analyses (all VIFs were less than 1.3). The results from these analyses (Tables 4 and 5), show that for the undergraduate alumni, the 5 alumni characteristics explained 25.3% of the variability in institutional transferable skills ($F(5, 36357) = 2461.47, p < .001$) and 15.6% in institutional business-based skills ($F(5, 36467) = 1348.35, p < .001$). For the graduate alumni, the 5 alumni characteristics explained 28.4% of the variability in institutional transferable skills ($F(5, 10275)$

= 816.60, $p < .001$) and 15.7% in institutional business-based skills ($F(5, 10237) = 382.44$, $p < .001$). For the workplace skills, the 9 alumni characteristics explained 9.3% of the variability in institutional transferable skills ($F(9, 35761) = 409.57$, $p < .001$) and 10.8% in institutional business-based skills ($F(9, 35693) = 480.71$, $p < .001$).

For the institutional skills models (Table 4), institutional satisfaction, internship participation, and cohort were significant positive predictors; this finding was consistent for both undergraduate and graduate levels. Gender was a negative predictor of business-based skills at both levels, meaning that females reported learning lower amounts of business-based skills than males. For the undergraduate level only, race was a negative predictor of transferable skills, meaning that non-White respondents reported learning greater amounts of transferable skills. Some of these relationships are expected, as it makes sense that those who are more satisfied with their overall institutional experience and have participated in a high impact practice (Kuh, 2008) like an internship would feel that they acquired more skills during their time there. Additionally, more recent graduation cohorts have more salient memories of acquiring various skills, and might therefore report higher levels of skill development. However, it is interesting to note that females at both the undergraduate and graduate levels feel they have deficits in their business-based skills. This finding mirrors some of the research concerning gender disparities in male-dominated fields (Steele, James, & Chait Barnett, 2002) such as business, where for instance the roles of men and women at Fortune 500 companies differ significantly (Peterson & Philpot, 2007).

For the workplace skills models (Table 5), corresponding institutional skills, self-employment, working in an arts field, income, and gender were significant positive predictors. Having been a professional artist was a significant positive predictor of business-based skills,

and having a graduate degree was a significant positive predictor of transferable skills. Race and cohort were negative predictors of both workplace skills, meaning that non-Whites and older cohorts reported the skills as being more important. As with the other models, many of these relationships are not surprising. One would expect that higher levels of skill development, higher income, being self-employed, and working in the field in which one received training would result in the perception of greater importance of a given skill type. Furthermore, older cohorts are more likely to have salient workplace experiences (rather than institutional ones), and therefore attribute greater importance to work skills. However, some findings were more surprising, such as that even though females felt they acquired *less* business skills at their institution, they rated both transferable and business skills as *more* important in their work experiences. This suggests an even greater need to address gender disparities in the teaching of business skills across all majors in higher education.

Limitations

Although there are many strengths of this study, some limitations should be noted. Given the data collection procedures and response rates, the sample may not be representative of all arts alumni and caution should be made when making generalizations. Furthermore, this study relied on self-reported data, which may not always be completely objective. However, most studies looking at self-reports in higher education suggest that self-reports and actual measure of things like abilities are positively related (Anaya, 1999; Pike, 1995).

Conclusions

The findings suggest that there are different types of skills and competencies that institutions should consider when developing these skills in students for their eventual use in the workplace. Measures of skills, from both institutional and workplace perspectives are necessary

to provide a more complete picture for assessment and accountability purposes. More research is needed to further explore how institutions can use information about skills and competencies of their alumni to make improvements in areas such as programming/curriculum revisions.

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Table 1

Exploratory Factor Analysis Results: Rotated Component Matrix for Institutional Skills

Item	Factor 1: Business-Based	Factor 2: Transferable
Financial and business management skills	.860	-.168
Entrepreneurial skills	.893	-.175
Networking and relationship building	.778	.014
Critical thinking and analysis of arguments and information	-.108	.854
Creative thinking and problem solving	-.045	.786
Broad knowledge and education	-.045	.756
Improved work based on feedback from others	-.018	.742
Research skills	.052	.703
Clear writing	.096	.655
Persuasive speaking	.346	.479

*Kaiser-Meyer-Olkin statistic = .918; Factor correlation $r = .582$

**Factor 1 eigenvalue explains 41.742% variance; Factor 2 eigenvalue explains 9.839% variance

Table 2

Exploratory Factor Analysis Results: Rotated Component Matrix for Workplace Skills

Item	Factor 1: Transferable	Factor 2: Business-Based
Critical thinking and analysis of arguments and information	.797	-.210
Creative thinking and problem solving	.643	-.008
Broad knowledge and education	.668	-.072
Improved work based on feedback from others	.619	-.085
Research skills	.661	-.001
Clear writing	.752	-.111
Persuasive speaking	.668	.098
Financial and business management skills	.017	.777
Entrepreneurial skills	-.105	.887
Networking and relationship building	.285	.518

*Kaiser-Meyer-Olkin statistic = .873; Factor correlation $r = .432$

**Factor 1 eigenvalue explains 32.481% variance; Factor 2 eigenvalue explains 10.196% variance

Table 3

Confirmatory Factor Analysis: Model-fit Results

	N	GFI	CFI	RMSEA	PCLOSE
Model statistics: Institutional Skills	28,746	.990	.989	.051	.141
Model statistics: Workplace Skills	26,416	.988	.980	.051	.142

Note: Strong model fit is reflected by GFI greater than .85, CFI greater than .90, RMSEA less than .06, and PCLOSE greater than .05.

Table 4

OLS Regression Results (Standardized Beta Weights) for Institutional Skills Subscales

Independent variables	Undergraduate: Transferable β	Undergraduate: Business-Based β	Graduate: Transferable β	Graduate: Business-Based β
Institutional Satisfaction	.491***	.349***	.535***	.369***
Internship Participation	.049***	.107***	.065***	.115***
Female	-.008	-.036***	.005	-.033***
White	-.011*	.006	.001	-.009
Graduation Cohort	.152***	.161***	.126***	.149***
R^2	.253***	.156***	.284***	.157***

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 5

OLS Regression Results (Standardized Beta Weights) for Workplace Skills Subscales

Independent variables	Transferable β	Business-Based β
(Parallel) Institutional Skill	.228***	.185***
Ever Self-Employed	.037***	.190***
Work in Arts Field	.019*	.014**
Ever Professional Artist	.004	.124***
Graduate Degree	.121***	-.001
Income	.143***	.043***
Female	.049***	.041***
White	-.044***	-.038***
Graduation Cohort	-.024***	-.037***
R^2	.093***	.108***

* $p < .05$; ** $p < .01$; *** $p < .001$

Appendix A

Complete List of Skills and Competencies Items

*Institutional Stem: In your opinion, how much did [INSTITUTION] help you acquire or develop each of the following skills and abilities?

*Workplace Stem: How important are the following to perform effectively in your profession or work life?

Critical thinking and analysis of arguments and information
Broad knowledge and education
Improved work based on feedback from others
Creative thinking and problem solving
Research skills
Clear writing
Persuasive speaking
Project management skills
Technological skills
Artistic technique
Financial and business management skills
Entrepreneurial skills
Interpersonal relations and working collaboratively
Leadership skills
Networking and relationship building
Teaching skills

Appendix B

Occupation Categories: Response Options and Values

- 1 = Architect
- 2 = Arts administrator or manager (including development, marketing, or box office/sales)
- 3 = Museum or gallery worker, including curator
- 4 = Graphic designer, illustrator, or art director
- 5 = Interior designer
- 6 = Web designer
- 7 = Other designer
- 8 = Higher education arts educator
- 9 = K-12 arts educator
- 10 = Private teacher of the arts
- 11 = Other arts educator
- 12 = Craft artist
- 13 = Fine artist
- 14 = Film, TV, video artist
- 15 = Multi-media artist or animator
- 16 = Photographer
- 17 = Actor
- 18 = Dancer or choreographer
- 19 = Engineer or technician (sound, light, other)
- 20 = Musician (including instrumental, vocal, conductor, composer, arranger)
- 21 = Theater and stage director, or producer
- 22 = Writer, author, editor
- 23 = Other occupation associated with the arts
- 24 = Building, maintenance, installation, and repair
- 25 = Communications (e.g., journalism, marketing, public relations, advertising, fundraising)
- 26 = Computer and mathematical occupations (e.g., IT, analysts, and software developers)
- 27 = Construction
- 28 = Education, training, and library
- 29 = Engineering and science (e.g., scientists and researchers)
- 30 = Farming, fishing, and forestry
- 31 = Financial and other business services
- 32 = Food preparation related (e.g., chefs, caterers, and servers)
- 33 = Healthcare
- 34 = Human resources
- 35 = Legal
- 36 = Management (e.g., executives and managers)
- 37 = Manufacturing
- 38 = Military and protective services (e.g., law enforcement, fire, safety, and security workers)
- 39 = Office and administrative support
- 40 = Sales (e.g., real estate, retail sales)
- 41 = Services and personal care (e.g., childcare, beauty, animal care, tourism)
- 42 = Social services (e.g., counselors, social workers, and religious workers)
- 43 = Transportation and material moving
- 44 = Other occupations outside of the arts
- 45 = Other occupation