

Connecting learning experiences to career choices: A survey of built environment students

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Abstract:

This study sought to examine the role of learning experiences on the career preferences of undergraduate students in built environment programs in South Africa. To achieve the study objectives, a survey of 229 purposively sampled university students registered in built environment programs was conducted. Although results from the regression analysis showed that the career choices of students in this study to undertake a career in the built environment, were not directly related to their previous learning experiences, the questionnaire survey revealed that performance accomplishment had a significant influence on students' persistence and career choices. Additionally, recommendations are made to improve the perception and attract students to built environment programs.

Keywords:

Built environment, career choice, construction, learning experiences, SCCT, women

1 Introduction

Numerous studies reveal that students worldwide find it difficult to choose a career in the built environment (Amaratunga et al., 2006; Moore, 2006; Chileshe and Haupt, 2010; Male et al., 2017; Akinlolu and Haupt, 2021). Typically, the academic choice and subsequent occupational choice are a dilemma for students and usually carries long term consequences (Haupt and Fester, 2012). Career decision making is complex, unique and is dependent on cognitive factors and the socialisation process (Shumba and Naong, 2012). Career development theories concerning young people validate the fundamental principle that the historical and cultural environment moulds the development of an individual (Watson, McMahon and Longe, 2011). Their career aspirations gradually become constrained and influenced as they develop. During the stages of development, occupational aspirations become progressively realistic, and their self-identity develops through their interaction with the environment, primarily through exposure to adult career roles (Becares and Priest, 2015).

The Socio-cognitive career theory (SCCT) has been commonly applied in STEM academic and vocational choice research (Kelly, 2009; Flores, 2010; Navarro et al., 2014). Further, numerous studies have identified SCCT as a valuable approach for examining academic and career choices of diverse group of students in male-dominated work (Byars-Winston et al, 2010; Wang and Degol, 2017). While there has been growth in research trends on career choice factors, very little has focused on learning experiences. Much of the published literature has concentrated on individual cognitive variables such as self-efficacy, outcome expectations, goal representations and interests rather than contextual and person factors

(Hackett and Betz, 1981; Moore, 2006; Kelly, 2009). Personal experiences and performance standards acquired through learning experiences combined with social realities have been found to enhance or hinder career and academic options. Therefore, this paper aims to assess students' perceptions of the influence of their learning experiences on their decision to undertake a career within the built environment profession.

2 Learning Experiences and SCCT

The Socio cognitive Career Theory describes learning experiences as a predictor of self-efficacy and outcome expectations which verbal encouragements, supports, and modelling from significant life figures, and are used to maximise a person's performance achievement. (Flores et al., 2010). The interaction of person and contextual factors with learning experiences influences the career choice behaviour of a person (Hunt et al., 2017). A combination of a variety of previous learning reinforcements are responsible for future career behaviours (Lent et al., 2008). The environment exposes a person to different activities that may be relevant to a career, during the socialisation process (Flores, 2010). A person also observes other people within their environment performing various vocational tasks, thus, implicitly, or explicitly exposing them to a variety of activities and strengthening their aspirations to pursue a career in different ways (Kelly, 2009).

People refine their career choices by repeating certain activities, emulating role models, and receiving feedback from models (Lent et al., 1994). Noteworthy, is the impact of differential access to role models, vicarious learning opportunities, and performance abilities resulting in differential learning experiences (Lent et al, 2008). Learning experiences, such as vicarious learning and self-evaluative experiences, result in values that are obtained through the socialisation process and basic social learning activities (Alexander et al., 2011). A variety of social and cultural factors such as family could affect career development and aspirations (Whiston and Keller, 2004).

Personality traits, family, school, media, socioeconomic status, and geographic location have all been found to influence adolescent professional aspirations (Watson, McMahon and Longe, 2011). The impact of society on children's career development emerges from learning experiences shaped by social influences. Interactions with family, teachers, peers, role models, cultural and religious institutions, and media sources shape personal values and standards, which can in turn influence career choices (Charity-Leeke, 2012). Classroom experiences, such as classroom climate and teaching styles, provide opportunities for learning that influence academic and occupational choices (Kessels and Taconis, 2012; Kelly, 2009).

Specific to STEM occupations, research has revealed the importance of the role of learning experiences that re-enforces students' persistence to undertake careers and succeed in their profession (Flores, 2010; Charity-Leeke, 2012). Flores et al. (2010) adopted the SCCT to identify the variables that hinder the career development of adolescent students. The study focused on the relationship between non-traditional self-efficacy and contextual factors such as learning experiences which include level of assimilation, perceived parental supports, perceived barriers and attitudes, and their influence on career aspirations. The study revealed that student's career choices were predicted by non-traditional career-self-efficacy, which supports the effectiveness of learning experiences as a predictive factor for career aspirations.

Contextual factors may affect opportunities for learning experiences, therefore indirectly influence self-efficacy. Lent et al. (1994) argued that contextual factors are socially constructed, and differences in learning experiences may hinder self-efficacy and career opportunities for students. Other studies have also reported learning experiences to be related to career choice (Rubie-Davies et al., 2015; Jansen et al., 2015). In summary, this study extends the application of the SCCT to the career choices of university students. At measurement level, the paper sought to examine the factor structure of the career learning experiences scale, assessing whether a resigned learning experiences scale could better measure student's learning experiences. Further, the study examined the prediction of career choices by learning experiences by testing a hypothesis to predict the role of learning experiences in relation to career choices and decision making.

3 Research Methodology

3.1 Study design

A descriptive survey design adopting a quantitative research approach was used in this study, to measure the effect of a person's learning experiences on their decision to undertake a career in the built environment. In the questionnaire, four learning experiences statements (see Table 1) extracted from literature were set to measure and rank the influence of learning experiences on career choice. These results are the variables that were used to test if learning experiences have a direct significant influence on a career choice in the built environment.

3.2 Study subjects and sampling

The target population for the survey was 461 which is the number of students in the built environment programmes in the two universities and was used for data collection. The sample size were 229 students registered in built environment programmes such as construction management, building, civil engineering, land surveying, architecture, and quantity surveying, who were selected purposively for the study. A convenient sample of two public universities in South Africa was conducted.

3.3 Scale measures: Learning experiences

The Patton et al.(2021) engineering learning experiences questionnaire adapted from Bandura (1997) and consistent with the four sources of self-efficacy beliefs, namely, performance accomplishments, vicarious learning, verbal persuasion, and emotional arousal was used to measure learning experiences in this study.

3.4 Data collection tool

A close-ended questionnaire survey was electronically administered within five weeks. The questionnaires were developed using Google forms and subsequently distributed using hyperlinks via email and WhatsApp.

3.5 Factor analysis

Exploratory Factor Analysis (EFA) was utilised to estimate the reliability and validity of the learning experiences construct. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test and Bartlett's Test of Sphericity were used to determine the strength of the relationships between the variables. Factor analysis is considered adequate when the value of the KMO test is between 0.6 and 1 (Pallant, 2020; Tabachnick and Fidell, 2013).

A statistically significant Bartlett test ($p < 0.05$) indicates that strong interrelationships exist between the items in the model construct to proceed with the analysis (Pallant, 2020). For factor extraction, Maximum likelihood, and Promax with Kaiser Normalisation rotation (oblique - correlated) was used to obtain a clearer perspective of the variables (Pallant, 2020). As each factor is extracted, the maximum likelihood analysis statistically tests the significance. A threshold of 0.3 was adopted in this study. The Kaiser's criterion was used, to decide which factors to retain, Eigenvalues greater than 1 were considered significant and retained (Tabachnick and Fidell, 2013).

4 Findings and Discussion

4.1 Demographic statistics

Of 229 respondents, 116 were men (50.7%). The highest number of participants were in their first year of study ($n=94$; 41%). Most students were registered in the Construction Management program ($n=110$; 48%).

4.2 Influence of learning experiences on career choice

An assessment of the influence of the learning experience variables revealed that the item students ranked successfully completing tasks and activities related to their career, highest (mean score = 4.10). Students perceived experiencing feelings of anxiety and a fear of failing at performing career related activities (mean score= 3.67) to have the least influence on their career choices.

The normality of the data distribution was assessed using Kolmogorov-Smirnov Z and Shapiro-Wilk test. The normality test revealed a non-normal distribution at 0.000 for the learning experience variables as presented in Table 1.

The survey results presented the evaluation of the influence of learning experiences elements. It was revealed that students perceived successfully completing career related activities and receiving positive feedback and encouragement from significant others, to be the most influential learning experience factors on their career decisions.

Table 1: Perception of learning experiences on career choice

	Learning experiences	Mean	Std. Dv.	Rank	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
					St.	df	Sig.	St.	df	Sig.
LEX 1	I receive positive feedback and encouragement, from important people in my life	4.04	.999	2	.234	229	.00	.812	229	.00
LEX 2	I learn by observing other people perform career related activities	4.01	1.002	3	.268	229	.00	.808	229	.00
LEX 3	I feel anxious, nervous and scared to fail when performing career-related tasks	3.67	1.117	4	.218	229	.00	.882	229	.00
LEX 4	I am successfully at completing career related tasks and activities	4.10	.970	1	.271	229	.00	.784	229	.00

4.2.1 Exploratory factor analysis – Learning experiences

Four items of the learning experiences scale were analysed. The KMO for learning experiences was 0.706, and Bartlett's test of Sphericity ($p < 0.000$) was obtained, as shown in Table 2. This indicated that the KMO value is above the cut-off value of 0.60. The results meet the criteria for factor analysability. The Cronbach's alpha for the learning experiences scale was of 0.765, indicating adequate internal reliability. The corrected item-total correlation value for LEX3 was below the recommended cut-off value of 0.3, indicating that the item may not be a good measure of the construct. Results from the analysis of communalities in Table 3 showed that item LEX3 emerged as problematic due to low communalities.

Table 2: KMO and Bartlett's test for learning experiences

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.706
Bartlett's Test of Sphericity	Approx. Chi-Square	175.841
	Df	6
	Sig.	.000

One factor emerged with an eigenvalue greater than 1, explaining 52.5% of the variance, as shown in Table 4. Although there was no need for further rotation of the solution, since only one factor was extracted, the researcher eliminated item LEX3, because the item had an extremely low communality value. The solution was, therefore, considered to meet the criteria for convergent discriminant validity.

Table 3: Learning experiences factor statistics

Item	Factor Loading	Corrected item-total correlation	Communalities	
			Initial	Extraction
LEX1	.755	.536	.379	.571
LEX2	.685	.543	.333	.470
LEX3	.243	.217	.054	.059
LEX4	.699	.539	.341	.489

Extraction Method: Maximum Likelihood

Low communalities in bold text

Table 4: Initial eigenvalues for learning experiences

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	2.101	52.537	52.537
2	.920	23.010	75.547
3	.532	13.302	88.849
4	.446	11.151	100.000

4.3 Relationship between career choice predictors and a career in construction

The Pearson's chi-square test was used to evaluate the relationship between perceived learning experiences and career choice. The parameter estimate is significant at $p \leq 0.05$.

Table 5 presents the results of the standardised regression analysis assessing the relationship and direct influence of learning experiences on career choice. Inspection of the R^2 and p-value revealed no direct influence on career choice ($R^2 = -0.500$, $p = 0.088$). Although learning experiences was hypothesised to have a direct influence on career choice, there were no empirical findings to support the hypothesis. Therefore, the hypothesis was rejected.

Table 5: Testing direct influence of learning experiences on career choice

Proposed Hypothesis		Regression Estimate	P	Rejected/Supported
CRC $\leftarrow$ LEX	Hypothesis	0.500	0.088	Rejected

Although, findings from past studies have suggested that career choices of individuals are generally influenced by some parts of their external environment, which they learn from by observation of the demographic features of that profession (Ericksen, 2013; Lent et al., 1994). This is contrary to the anticipated outcome of learning experiences as a determinant of career choice. According to (Betz, 1989; Ericksen, 2013) the development of relevant information and skills through learning experiences fosters a strong career self-efficacy belief which could

result in choosing a career in a specific profession. There could be several explanations for the non-influence of learning experiences on the career choices of the students in this study.

A possible reason can be related to the theory of locus of control (Layton, 1987). Trice et al. (1989) described locus of control as the extent of a person's belief that they are in control of their choices and can carve their future career plans. Studies argue that career choices are connected to a sense of taking control and taking responsibility for major life events (Luzzo and Jenkins-Smith, 1998; Abdinoor, 2020). Therefore, people with a high internal locus of control perceive that career-related life occurrences such as career choices and aspirations are because of their capabilities, skills and other internal factors that are within their control. It could be that the sample in the current study perceive that their career choices are rarely influenced by their experiences.

Another likely explanation for the non-influence of learning experiences, is that the sample may be socio-economically homogenous, as most of the respondents are from low socio-economic categories and may not have positive or access to any learning experiences at all. Betz (1989) argued that an environment where there is a lack of access to career information and experiences for young adults, and neither promotes nor discourages involvement in these careers constitutes a null environment. Further, such an environment with profound poverty which ultimately influences learning experiences is unlikely to foster career and academic aspirations.

5. Conclusion and Further Research

This study explored how students in the built environments' career choices are shaped by their past and present learning experiences. The study focused specifically on learning experience as a predictive variable of career choice. Results from the study clearly revealed that the choice of students to undertake a career in the built environment professions was not predicted by their learning experiences. Consequently, encouraging and supporting students to choose careers in the built environment is crucial. It is important to ignite student's interest for these occupations through their socialisation process from childhood. These early learning experiences should be simultaneously linked to children's perceptions and preconceptions of career-related activities in the built environment. Information and guidance from experienced professionals should be provided to students, especially students who are in the process of making career decisions, to create clearer pathways for their future career. This is especially important for students from low-income families with disadvantaged backgrounds who are interested in pursuing careers in the built environment but have little or no access to career-related information because their socialisation process may have undermined their consideration and enthusiasm to pursue and persist in these careers. The goal is to enhance students' persistence and self-efficacy beliefs as they relate to the built environment to strengthen their career decisions.

A potential area for future research may be to conduct studies applying the SCCT constructs to investigate the differential influence of learning experiences on the career choice behaviour of students from low, medium, and high SES categories.

6 References

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