

Perception of Teachers and Administrators on the Teaching Methods that Influence the Acquisition of Generic Skills

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Abstract

This study is designed to identify the most significant teaching methods that influence the acquisition of generic skills of mechanical engineering trades students at technical college level. Descriptive survey research design was utilized in carrying out the study. One hundred and ninety (190) respondents comprised of mechanical engineering trades' teachers and the administrators in the technical colleges in north central states of Nigeria responded to a structured questionnaire which addressed the research question. Based on the findings it was recommended that the technical college administrators must emphasize that teachers use the teaching methods identified from the result of the study as the most significant teaching method that influence the acquisition of generic skills in order for the students to acquire the skills for gainful employment in the labor market after graduation from the school.

Keywords: teaching methods, generic skills, mechanical engineering trades, technical college

1. Introduction

Generic skills are a group of skills which help in supporting the ability of an individual to perform effectively in the workplace. They are non-technical skills and sometimes called transferable skills' or 'soft skills' or 'employability skills'. Generic skills consist of basic skills that include: thinking skills, resource skills, information skills, interpersonal skills, system and technology skills and personal qualities (Clarke, 2007). Generic skills are those basic skills necessary for securing, maintaining and doing well on a job. Zinser (2003) stated that generic skills include areas such as managing resources, communication and interpersonal skills, team work and problem-solving and acquiring and retaining a job. Generic skills are those essential skills necessary for getting, keeping, and doing well in a job. These are the skills, attitudes and actions that enable workers to get along with their fellow workers and supervisors and to make sound, critical decisions. Unlike occupational or technical skills, generic skills are common in nature rather than job specific and cut across all industry types, business sizes, and job levels from the entry-level worker to the senior-most position. (Robinson & Garton, 2008).

According to Robinson et al. (2007) there is a great demand for educated people with generic (employability) skills and specialized technical skills. Workers in the 21st century need skills such as problem-solving and analytic, decision-making, organization and time management, risk-taking, and communication to be employable in the workforce. These skills cannot be acquired without effective methods of instruction in Technical Vocational Education (TVE) institutions especially in technical colleges where different trade programs are offered. Audu et al. (2013) affirmed that generic skills must be emphasized in TVE institutions especially technical colleges because these skills can accelerate employment among youths and school leavers. Without these skills, youths can be considered disadvantaged in competing for employment after graduation from school. The acquisition of life-long or generic skills calls for effective and efficient teaching methods and the utilization of improved and standard instructional facilities, to ensure the production of desired quality of the graduates with enterprising skills. The quality of the teachers and the utilization of the right method of teaching by the teachers play an important role in the acquisition of generic skills of the students. It is on this basis that this study is designed to identify the teaching methods that have significant influence on the acquisition of generic skills for

Mechanical Engineering Trades (METs) students at technical college level in north central states of Nigeria based on the perspective of mechanical engineering trades teachers and the schools administrators.

2. Objective of the Study

The main goal of this study is to identify the teaching methods that influence the acquisition of generic skills of METs students at technical college level in Nigeria. Specifically, regression analysis was used to analyze the quantitative data collected from the respondents that participated in the research. The teaching methods that were considered in the study includes: demonstration, lecture, discussion, problem based learning, work based learning, project based learning, computer based instruction, simulation, field trip, context based learning, student centered and tutorials and seminar.

3. Methodology

The research methodology describes the procedures involved in carrying out the study which are discussed under relevant sub-headings below:

3.1 Research Design

Descriptive survey research design was used for data collection in the technical colleges in north central states of Nigeria. According to Nworgu (1998), descriptive survey research is one in which a group of people or item is studied by collecting and analyzing data only from a few people or items considered to be representative of the entire group. Therefore, questionnaire was used to determine the opinion and responses of METs teachers and the technical college administrators on the teaching methods that influence the acquisition of generic skills of METs students in technical colleges in north central states of Nigeria.

3.2 Research Sample and Sampling Procedure

Simple random sampling techniques were used to select 17 out of 28 technical colleges offering METs in the technical colleges in north central states of Nigeria. A sample of 190 respondents comprised of METs teachers and the administrators in the technical colleges in north central states of Nigeria were selected using a purposive sampling technique from the 17 technical colleges that were used as the sample for the study. Only institutions owned and controlled by the Federal and State Government of Nigeria based on their similar and harmonized characteristics in admission, curriculum and graduation requirements were involved in the selection of respondents for this research.

3.3 Instrument and Instrumentation

The research instrument (Questionnaire) was developed by the researchers. A five point (5) point rating scale response options was used on the questionnaire. To determine the validity of the instrument, the items were critically examined by three experts in TVE for face and content validity. After validity and pilot testing of the instrument, it was administered to the respondents. The instrument (questionnaire) developed comprised of a significant approach considered determinants of the teaching methods that influence the acquisition of generic skills of mechanical engineering trades. The questionnaire was utilized in the collection of data based on the perspectives of METs teachers and the administrators of technical colleges in north central states of Nigeria.

4. Results

The research question that guided the conduct of the research was answered and tested respectively. The research question reads; (*What are the teaching methods that influence the acquisition of generic skills?*).

4.1 Regression Analysis

Step-wise criteria were selected in SPSS software for regression analysis. The analysis was computed and the results were highlighted in the tables below.

4.2 Research Question: What Are the Teaching Methods that Influence the Acquisition of Generic Skills?

Table 1. Regression analysis of METs teachers results on the teaching methods that influence the acquisition of generic skills of METs students

Item No	Significant Determinant of Teaching Methods that Influence the Acquisition of Generic Skills	U.C		S.C			95.0% Confidence Interval for B	
		B	SE	Beta	t	Sig.	Lower Bound	Upper Bound
1(a)	Work based learning	1.383	.025	.984	4.317	.000	1.332	1.433
2(a)	Work based learning	.776	.096	.552	8.065	.000	.585	.967
	(b) Fieldtrip	.660	.102	.443	6.471	.000	.457	.862
3(a)	Work based learning	.575	.102	.409	5.622	.000	.372	.778
	(b) Fieldtrip	.513	.101	.344	5.054	.000	.311	.714
	(c) Student centred	.539	.133	.247	4.048	.000	.275	.803
4(a)	Work based learning	.401	.110	.285	3.647	.000	.183	.619
	(b) Fieldtrip	.408	.101	.274	4.035	.000	.207	.609
	(c) Student centred	.502	.127	.230	3.952	.000	.250	.754
	(d) Discussion	.302	.089	.214	3.377	.001	.124	.479
5(a)	Work based learning	.286	.113	.204	2.543	.013	.063	.510
	(b) Fieldtrip	.320	.102	.215	3.149	.002	.118	.522
	(c) Student centred	.447	.123	.205	3.623	.000	.202	.692
	(d) Discussion	.261	.087	.185	2.993	.004	.088	.433
	(e) Project based learning	.272	.092	.197	2.966	.004	.090	.454
6(a)	Work based learning	.219	.114	.156	1.927	.057	-.007	.445
	(b) Fieldtrip	.230	.107	.154	2.153	.034	.018	.442
	(c) Student centred	.431	.121	.198	3.571	.001	.191	.671
	(d) Discussion	.232	.086	.164	2.697	.008	.061	.403
	(e) Project based learning	.243	.091	.176	2.684	.009	.063	.423
	(f) Tutorials and seminar	.238	.102	.158	2.326	.022	.035	.440

Note. B = Unstandardized Beta Coefficient, SE = Standard Error, Beta = Standardized Beta Coefficient, t = t-test Statistics, Sig. = Significant Value.

Table 1 presents the result of Linear Regression Analysis using the 'Stepwise Criteria', though a significant regression model emerged with $F_{6,98} = 2950.329$, $p < 0.05$, $R^2 = .984$, six (6) Predictor Variables (work based learning, fieldtrip, student centred, discussion, project based learning and tutorials and seminar) with $B = .156, .154, .198, .164, .176$ and $.158$ respectively, $p < 0.05$ are significant determinants of teaching methods that are used to influence the acquisition of generic skills of METs students at technical college level. Other determinants such as the use of demonstration, the use of lecture, the use of simulation, the use of context based learning, the use of computer based instruction and the use of problem solving approach have less significant contribution towards influencing the acquisition of generic skills of METs students at technical college level in north central states of Nigeria. Table 2 below shows a summary of the most six (6) significant determinant of teaching methods that influence the acquisition of generic skills of METs students at technical college level in Nigeria, based on METs teachers responses.

Table 2. Summary of METs teachers result on the most significant determinant of teaching methods that influence the acquisition of generic skills of METs students

Item No	Most Significant Determinant of Teaching Methods that Influence the Acquisition of Generic Skills	R	R ²	Adjusted R ²	Std. Error of the Estimate
a	Work based learning	.984 ^a	.968	.968	.88546
b	Fieldtrip	.989 ^c	.978	.977	.74381
c	Student centred method	.990 ^d	.981	.980	.69102
d	Discussion method	.991 ^e	.983	.982	.65637
e	Project based learning	.992 ^f	.984	.984	.63098
f	Tutorials and seminar method	.993 ^g	.985	.984	.61668

Note. R = Regression, R² = Multiple Regression Coefficient, Adjusted R² = Adjusted Multiple Regression Coefficient.

The highest value of Adjusted R² of .984 in Table 2 indicates that the model account for 98.4% variance in the teaching methods that influences the acquisition of generic skills of METs students at technical college level in Nigeria. This further reveals that these six (6) items are most significant determinants towards influencing the acquisition of generic skills of METs students at technical college level in Nigeria.

Table 3. Regression analysis of administrators results on the teaching methods that influence the acquisition of generic skills of METs students

Item No	Significant Determinant of Teaching Methods that Influence the Acquisition of Generic Skills	U.C		S.C		95.0% Confidence Interval for B		
		B	SE	Beta	t	Sig.	Lower Bound	Upper Bound
1(a)	Simulation	1.519	.035	.988	42.917	.000	1.448	1.590
2(a)	Simulation	.777	.087	.505	8.898	.000	.601	.953
(b)	Work based learning	.742	.085	.498	8.769	.000	.571	.912
3(a)	Simulation	.632	.084	.411	7.528	.000	.463	.801
(b)	Work based learning	.604	.081	.405	7.452	.000	.441	.767
(c)	Tutorials and seminar	.428	.108	.192	3.971	.000	.211	.645
4(a)	Simulation	.552	.082	.359	6.699	.000	.385	.718
(b)	Work based learning	.451	.092	.303	4.925	.000	.266	.636
(c)	Tutorials and seminar	.360	.102	.162	3.527	.001	.154	.567
(d)	Project based learning	.258	.089	.186	2.898	.006	.078	.437
5 (a)	Simulation	.502	.081	.327	6.202	.000	.339	.666
(b)	Work based learning	.376	.093	.252	4.054	.000	.189	.563
(c)	Tutorials and seminar	.285	.102	.128	2.788	.008	.079	.492
(d)	Project based learning	.234	.085	.169	2.753	.009	.062	.406
(e)	Fieldtrip	.199	.085	.134	2.346	.024	.028	.369

Table 3 presents the result of Linear Regression Analysis using the 'Stepwise Criteria', though a significant regression model emerged with $F_{5,45} = 2512.480$, $p < 0.05$, $R^2 = .995$, five (5) Predictor Variables (simulation, work based learning, tutorials and seminar, project based learning and fieldtrip) with $B = .327, .252, .128, .169$ and $.134$ respectively, $p < 0.05$ are significant determinants of the teaching methods that are used to influence the acquisition of generic skills of METs students at technical college level. Other determinants such as the use of

student centred, the use of discussion, the use of demonstration, the use of lecture, the use of context based learning, the use of computer based instruction and the use of problem solving approach have less significant contribution towards influencing the acquisition of generic skills of METs students at technical college level in north central states of Nigeria. Table 4 below shows a summary of the most five (5) significant determinant of teaching methods used to influence the acquisition of generic skills of METs students at technical college level in Nigeria based on the administrators responses.

Table 4. Summary of the administrators results on the most significant determinant of teaching methods that influence the acquisition of generic skills of METs students

Item No	Most Significant Determinant of Teaching Methods that Influence the Acquisition of Generic Skills	R	R ²	Adjusted R ²	Std. Error of the Estimate
a	Simulation	.988 ^a	.976	.976	.77215
b	Work based learning	.996 ^c	.991	.991	.47110
c	Tutorials and seminar	.997 ^d	.994	.993	.40764
d	Project based learning	.997 ^e	.995	.994	.37653
e	Fieldtrip	.998 ^f	.995	.995	.35782

The highest value of Adjusted R² of .995 in Table 4 indicates that the model account for 99.5% variance in the teaching methods that influences the acquisition of generic skills of METs students at technical college level in Nigeria. This further reveals that these five (5) items are most significant determinants towards influencing the acquisition of generic skills of METs students at technical college level in Nigeria according to the administrators.

5. Discussion

Generic skills are referred to the basic skills and capabilities that are needed from an individual to enable him to obtain, operate and function in any job. The skills are complementary to technical skills that are required for a particular job. Generic skills are basically not related to technical or academic performance but are more attached to traditional notion of intelligence and emotional intelligence (Down, 2012). However, the findings of the study revealed that work based learning, fieldtrip, student centred, discussion, project based learning, tutorials and seminar and simulation methods of teaching are the most significant predictor that influences the acquisition of generic skills of METs students. However, the administrators identified simulation as a major teaching strategy that influences the acquisition of generic skills whereas the teachers did not. The administrators have a lot of experience in teaching, majority of the administrators have been teaching for over 20 years in the technical colleges. Therefore, the views of the administrators are very important as regards to the teaching methods that influence the acquisition of generic skills. Zaharim et al. (2009) expressed the need of TVE graduates to acquire such skills for them to effectively fit in into the modern industries. Therefore, suggesting the use of suitable teaching methods in order to develop and enhance the generic skills of the students worldwide. Similarly, Wye and Lim (2009) also supported the importance of having equipping the graduates of TVE programs with appropriate generic skills and personal qualities for employment through the efforts of adequate and proper teaching methods in combination with the efforts of the industries, academics as well as students themselves.

The main goal of teaching TVE subjects is to impart knowledge and skills to students through theoretical and practical means for the purpose of training individuals for the world of work. However, it is unfortunate that in Nigeria, the trend has always been negative due to several factors such ineffective teaching methods by the teachers and inadequate instructional materials which affect the practical concepts and methods of learning negatively (Omo-Ojugo & Ohiwerei, 2008). The most common approach to teaching in TVE institutions in Nigeria is a situation whereby the teacher stands in the front of the class and gives verbal explanations to the students while the students become listeners and take note from the board, this type of approach is the usual practice in all subjects, even those which need practical or team work (Osakinle et al., 2010). Alseddiqi and Mishra (2010) reported that, in recent years in TVE, the teaching and learning processes are still being provided in a traditional manner without any amendment in the teaching approaches. The METs teachers in technical colleges are entrusted with the duty of preparing and training students to acquire the necessary skills so as to assume some specific roles in their workplace which should be focused and directed towards the development of skills, attitudes and work-related knowledge. Similarly, in a study conducted by Rau, Chu et al. (2006) they

demonstrated that in a knowledge-based economy, teaching approaches must be geared towards developing students' ability to "learn to re-learn"; to apply, to use, to disseminate and be innovative; to be able to adapt, synchronize information and respond to various changes. Therefore, the teachers should explore approved methods and practices for the teaching of TVE subjects especially mechanical engineering trades in the technical colleges.

6. Conclusion

The acquisition of generic skills in TVE especially mechanical engineering trades is a major factor in the design of TVE programs. Technical vocational education institutions especially technical colleges must make a greater effort to help students acquire the generic skills required by most organizations. The acquisition of generic skills will empower METs the students with the competence to practice, create, develop and establish self in the work place. Skills acquisition by students can only be achieved where the training institutions have competent and experienced teachers that adopt effective and efficient instructional methods. Therefore, METs teachers and administrators of the technical colleges must ensure that teachers used the methods identified as significant determinants of teaching methods that influence the acquisition of generic skills so that the students can acquire these and be gainfully employed at the end of the completion of their program.

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