

Learning Environment and the Development of Student's Generic Skills

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Abstract: This study aimed to identify the influence of learning environment on the development of student's generic skills in technical institution. The research instrument consists of 16 constructs measuring six scales of learning environment and ten scales to measure student's generic skills. The instrument was administered to 147 engineering students in one polytechnic in Malaysia. Result of multiple-regression analysis showed significant contribution of four learning environment factors to the variation of generic skills among the respondents. Clarity of the program objective is the most significant predictor to the development of generic skills in this study followed by the assessment, teaching approach and, community of learning. Examining aspects that contribute to the development of student's generic skills in these four elements is important in designing a curriculum that support and promote the development of generic skills among students.

Key words: Generic skills • Learning environment • Assessment • Learning community • Technical skills

INTRODUCTION

In the era of rapid growth and global demand, the world is becoming more competitive and challenging. All nations across the globe have entered the knowledge-based economy. Within this k-economy, the employers needs worker who possess a good generic skills who are among others able to think critically and creatively, as an added value to be competitive and able to increase the productivity of the company. The industry that has competent worker will have a better opportunity to sustain in the economy. Since the cost of developing human capital is rising, many employers are expecting educational institutions to produce graduates who have the necessary skills and do not need any training from the industry.

Accordingly, the quality of the graduates is becoming major issues nowadays that are associated with their employability and marketability upon their graduation. Among the concerns are the lack of skills that are related to generic skills. Many quarters have shown concern regarding the role of higher institutions in ensuring the quality of human capital produced. In the context of technical graduates, technical skills alone do not guarantee employment for graduates in either

professional or semi professional job. Employers do not only look at the technical skills but also the generic skills of the prospective employee [1]. Thus, education institutions need to take effort to equip their graduates with not only the knowledge and practical skills but also their generic skills [2].

Review of literature documented a range of competencies that is sought after by the employers among others are communications skills, self-confidence, tolerance towards change and working in team [3, 4]. Some researcher claimed that interpersonal skills, knowledge seeking skills and flexibility have a relationship with success at the work place. It can be concluded that there is a big demand for the emphasis on the development of generic skills before individuals embark to the world of work.

In terms of technical education, results from past studies revealed that the graduates were lack of both technical skills and generic skills. Thus the education system should also take an effort to address this issue. The first step in addressing this issue would be to look into factors and loopholes in the current education system. A comprehensive curriculum that addresses both the knowledge as well as the development of generic skills should be emphasized.

The generic skills that are needed in the industry includes: adaptability, analytical, initiatives, interpersonal skills, leadership, self-confidence and able to work with others or working in teams. The combination of these skills are needed as a catalyst to increase individual productivity as well as the productivity of the company [5] so that they can be as competitive in the world's knowledge-based economy [6].

In Malaysia, the Malaysian Qualification Agency [2] has come up with the guidelines on eight domains of competencies that should be given emphasis by higher education provider. Of the eight domains, six of which refers to generic skills namely: 1) Communication and team skills, 2) Critical thinking and scientific approach, 3) Lifelong learning and information management, 4) Managerial and Entrepreneurial skills, 5) Social skills and responsibilities and 6) Professionalism, values, ethics and attitudes.

The education institutions play a role in embedding generic skills into the curriculum. In terms of technical institutions, the theory and practical learning acquired at the Polytechnic should be tailored to the needs of the firm [7]. The learning environment is seen as a medium of teaching and learning that is associated with the development of generic skills among the students. Thus, educational institutions play a role in providing learning environments that supports the technical knowledge and skills as well as the development of generic skills [8].

Learning environment plays a crucial role in students cognitive, psychomotor, social development (Rusni). It is belief that the learning environment at the institutions is important in the development of generic skills of the students. Learning environment refers to the psychological and pedagogical social context, in which learning occurs that affects students' attitude, behaviour and achievement [9].

One study reported a significant relationship between good teaching of learning with students' generic skills consistent with the findings of other studies [10]. Study on the relationship between learning environment and learning outcomes also found significant correlation between the two variables [11, 12]. Learning resources and learning community are also found as a significant predictor of generic skills [13, 14]. On study conducted by [15] in assessing the level of community college students' generic skills found that environmental factors contribute significantly to the level of college students' generic skills. Another study look at the relationship between the learning environment (learning communities, teaching

approach, the quality of the program) on communication skills, critical thinking, ethics and values and knowledge in the field [13]. The study found that learning communities are the most significant contributor to the development of these generic skills. Study also found that good teaching approaches are a significant predictors to the development of students' generic skills [11].

This study aimed to examine the relationship between factors in learning environments and the development of generic skills among technical students in Malaysia.

MATERIALS AND METHODS

This study is a descriptive study using self report questionnaire to gather information to answer the research questions. It is said that using student perceptions to assess the learning environment is significant because the students are directly involved in the learning environment [11, 16].

Sample: The sample consisted of students who were randomly selected using a systematic random sampling as proposed by [17] whereby, for a population of 240, the number of sample selected would be 148 respondents. A total of 150 questionnaires were distributed to the students in 2010/2011 academic session, while a total of 145 forms were collected.

Instruments: The instrument used in this study consisted of three parts: part A for demographic items, part B for learning environments item and part C for generic skills items.

The items to measure learning environment were adapted from the Course Experiences Questionnaire CEQ [19, 14] and questionnaire "What is happening in the Classroom - WIHIC [9, 19]. CEQ was developed by Ramsden to examine students' perceptions towards learning environments in higher education. According to [20] CEQ is a valid instrument and was developed from the theory of relationship between students' experiences in learning environment and the learning outcomes. All items in this scale was designed to measure the learning environment factors in the various fields and institutions where students have direct experience and be able to comment [11]. CEQ has been used by many researchers in the past to measure students' perceptions towards learning environment [11, 21-23].

Table 1: Cronbach Alpha values

Variables	Number of item	Cronbach Alpha
Assessment	5	0.92
Teaching approach	7	0.86
Assignment (Workload)	5	0.83
Program Objective	5	0.77
Learning Community	6	0.74
Learning Resources	5	0.70
Gathering and Analyzing Information skills	5	0.88
Basic skills	6	0.84
Working in team	5	0.91
Problem solving skills	5	0.91
Longlife learning skills	5	0.90
Technological skills	6	0.85
Entrepreneuship	6	0.93
Critical and Creative thinking skills	5	0.90
Leadership	6	0.91
Personal Quality	6	0.94

CEQ has 6 original scale of assessment: 1) the workload, teaching approaches, goals of the program, personal abilities and development of generic skills. CEQ was modified by [24] excluding the personal abilities. Another researcher adding other scales namely: student support, student quality, intellectual motivation, learning communities and learning resources [14]. For this study, CEQ questionnaire was modified and combined with items from WIHIC developed by [9] and [19]. Six scales were chosen for this study namely:

- Teaching approach: related to the quality of the lecturers who teach.
- Program Objectives / Goals are clear indicators that show whether the students were given an explanation of how and what knowledge and skills being developed in the program.
- Assessment: shows the extent and the quality of student assessment.
- Workload/assignment: To provide the perception towards the quantity and the difficulty of the task
- Learning Resources: The extent to which learning resources are available to students.
- Learning Communities: The extent to which the role of peers and lecturers involved in student learning.

Item to measure generic skills were adapted from questionnaires developed by the SCANS [25, 26], [15, 27, 2]. The model of generic skills in this study were adapted from: SCANS [25, 28, 29, 2, 30, 27, 31, 3, 4]

which includes: 1) gathering and analysing information, 2) basic skills, 3) working in teams, 4) problem solving skills, 5) Long-life learning skills, 6) technological skills, 7) entrepreneurial skills, 8), creative and critical thinking skills, 9) leadership skills and 10)personal quality.

Reliability: In this study, Cronbach's alpha values for all variables were more than 0.5 of which are beyond the value of reliability. The results showed that the Cronbach alpha (Table 1) were high and very high, i.e higher than 0.70.

Data Analysis: Data were analyzed using SPSS. The Significant level used was 0.05. Multiple-regression analysis was used to analyze the relationship between the dependent variable (criterion) and several predictor variables (predictor).

RESULTS AND DISCUSSION

The Relationship Between Learning Environment Factors and the Generic Skills:

Four out of six predictor variables for learning environment namely:(1) assessment, (2) program objective, (3) learning community and (4) teaching approach were included in the regression model at alpha level $p \leq .05$.

Table 2 shows the correlation between criterion variables (learning environment) and predictor variables (generic skills) is .594, the correlation between criterion variables and a combination of objectives and assessment is .676. While the correlation between criterion variables and linear combinations of predictor variables (program objectives, evaluation, learning community and teaching approach), was 0.73. The R^2 of 0.352 showed that 35.2% of the change in the criterion variable is due to changes in objectives. Combination of objectives and assessment contributed 45.7%. Meanwhile, the combination of

Table 2: Summary of the model

Model	R	R ²	Adjusted R Square	Std. Error of the Estimate
1	.594(a)	.352	.348	.33444
2	.676(b)	.457	.449	.30746
3	.712(c)	.507	.497	.29375
4	.730(d)	.533	.520	.28697

a Predictors: (Constant), objective

b Predictors: (Constant), objective, assesment

c Predictors: (Constant), objective, assesment, learning community

d Predictors: (Constant), objective, assesment, learning community, teaching approach

e Dependent Variable: generic skills

Table 3: Analysis of Varians for Generic Skills

Model		Sum of Square	dk	Mean Square	F	Sig.
1	Regression	8.706	1	8.706	77.838	.000(a)
	Residual	15.994	143	.112		
	Total	24.701	144			
2	Regression	11.277	2	5.639	59.649	.000(b)
	Residual	13.423	142	.095		
	Total	24.701	144			
3	Regression	12.533	3	4.178	48.415	.000(c)
	Residual	12.167	141	.086		
	Total	24.701	144			
4	Regression	13.171	4	3.293	39.984	.000(d)
	Residual	11.529	140	.082		
	Total	24.701	144			

a Predictors: (Constant), objective,

b Predictors: (Constant), objective, assesment,

c Predictors: (Constant), objective, assesment, learning community,

d Predictors: (Constant), objective, assesment, learning community, teaching strategies

e Dependent Variable: generic skills

Table 4: Multiple-Regression Analysis (Stepwise) to predict the contribution of learning environment to the variation on the generic skills

Model	B	Beta (β)	t	Sig.
Objective	.168	.219	2.709	.008
Assesment	.189	.245	3.740	.000
Learning community	.190	.221	2.690	.008
Teaching approach	.202	.232	2.783	.006

a Dependent Variable: generic skills

program objectives, assessment and learning community, contributing 50.7% on the variation in the generic skills. The linear combination of the four predictor variables was accounted for 53.3% of variance in the criterion variable.

The results showed that there was a correlation between the four predictor variables and criterion variable at $p < .05$. This value showed that the combination of four constructs (program objective, assessment, learning community, teaching approaches) contributed 53.3% variation in generic skills with objective was the biggest contributor (Table 3).

Table 4 shows the regression coefficient for the four predictor variables in linear combinations. The value of regression coefficient β represents the standard for the four predictor variables in the form of linear combinations. While the value of-t indicates significant results at $p < .05$. Thus, multiple linear regression equation is:

$$ZGS = (0.219) Z_{objective} + (0.245) Z_{assesment} + (0.221) Z_{learning\ community} + (0.232) Z_{teaching\ approach}$$

The learning environment is seen as the quality of teaching and learning in context which it occurs [18]. Through a survey conducted by Ramsden using quantitative and qualitative dimensions of learning environments have found the relationship between student factors, commitment to teaching, the workload/assignment, teaching approach, clarity of program objective to career goals, the social atmosphere and the freedom of learning related to generic skills. His findings are supported by quantitative and qualitative findings. According to [18], the students will appreciate the environment in which teachers strive to help them to learn.

Goal and Objective of the Program: According to Wheeler's Curriculum Development Process Model [32], the drafting of the curriculum should involve the goals and objectives of teaching and learning. Clarity of objectives is presented to students to facilitate students' understanding of content and skills needed to master the learning and produce the expected outcomes of the curriculum. Clarity of goals and objectives will influence the extent students monitor and control their learning process in related to the program goals. Clarity of objectives is the most significant predictor of Generic skills in this study. The objective of the program, courses and all educational activities should be clear and understood by students so that they know the course requirements and learning outcomes resulting from the learning objectives. Education institutions should provide a clear explanation and understood by students on the objectives to be achieved by students when the program is offered.

Assessment: Assessment includes activities and strategies to collect information about teaching and learning activities for improvement. Assessment procedures consisted aspects of testing, measurement data analysis and reports. The assessment is conducted to see whether the teaching and learning activities undertaken have achieved the planned objectives. In this study, Assessment is the second contributor to the development of students' generic skills. Authentic assessment of the actual assessment activities in the workplace should be emphasized by the educational institutions so that students can generate ideas and used critical and creative problem solving in real situations. Assessment that focused on the facts or just exam-oriented approach will make students apply the surface or rote rather than deep approach. It is belief that the

way we conduct assessment will give indication to students in their approach to learning and consequently affect their behavior in learning process and the development of the generic skills.

Learning Community: Learning community is a community that involves the interaction of students, peers and lecturers in the learning environment. Studies conducted by [33] revealed that environmental factors such as quality of academic interaction is a major contribution to the development of generic skills. This study obtained the same results where the learning community is a contributor to the development of students' generic skills. Learning community which emphasis mutual cooperation, fairness and encouraging students' idea will develop students communication skills, teamwork, leadership, entrepreneurship, problem solving and decision making skills.

Good Teaching Approach: Teaching approach in this study is also a significant contributor to the students generic skills. Thus, instructors, teachers or lecturers are the main contributing factors on student achievement. Teaching is a process or activity related to the knowledge delivery, cultivating new belief and changing students' attitudes or behavior. It is suggested that constructivist teaching approach that focuses on active participation of the learner in the learning process would facilitate and support the development of generic skills among students [34].

CONCLUSION

Generic skills are very important skills that determine the quality of the graduates as seen and demanded by the employers. Therefore, students graduated from the polytechnics should be equip with generic skills to makes them more marketable in the industry world. Generic skills are needed to help them address the challenge faced in the world of work. Thus the curriculum in polytechnics should give emphasis to this element and help produce a graduates with characteristics that are demanded by the industry. Results of this study reflected the need to give more effort and emphasis on the development of generic skills through the examinations of important learning environment factors that affect the development of students' generic skills such as the clarity of the program objective, the assessment activities, the learning community and a good teaching approach that support the development of generic skills among the students.

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