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An Inventory of Acquired Attributes of Graduates in a Higher Education Institution Versus Industry Required Attributes

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Abstract: COVID-19 has substantially affected the majority of work capabilities. Higher education is responsible for preparing graduates for employment and well-rounded individuals with varied talents. This study determined the acquired attributes of Bachelor of Science in Information Technology (BSIT) graduates and whether it is anchored to the required attributes by the industry. Descriptive and comparative research designs of the quantitative research method were used in this study. This study had two sets of participants. Data on acquired attributes were gathered from the BSIT graduates from 2017-2020 of the Private Higher Education Institution (HEI) in Santiago City, Philippines, who are presently employed. At the same time, required graduate attributes were provided by the representatives from the industry partners of the Private HEI. A total of 45 BSIT graduates and 26 companies participated in the study. Data were collected using a modified questionnaire through online surveys and drop and collect method. Through confirmatory factor analysis, mean scores, t-tests, and ANOVA, rankings, findings revealed the six-factor result, which tallies the latent variables used for this study. BSIT graduates confirmed that they acquired the necessary attributes to be competitive in the IT industry according to the prescribed attributes for BSIT graduates. The Graduates and the Industry agreed that Modern tool usage and resiliency are essential in these challenging times in the workplace. According to the findings, graduates' university-acquired skills and competencies considerably increased their opportunities in national and global markets and sectors, making them timely and relevant during COVID-19 and beyond.

Keywords: *Acquired attributes, industry required attributes, information technology graduates, Philippines, private higher education institution.*

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Introduction

Higher Education Institutions are centers of learning, where learning tradition is maintained and expanded (Cheng et al., 2021). Students' success is crucial and improving their knowledge, skills, and competencies should be emphasized significantly. Students' career changes may be influenced by how successfully they accomplish their predicted outcomes after graduation (Terano, 2019). Employability has become a significant subject in university education in many countries. Employability goals and improved student learning outcomes have become standard practice at higher education institutions (HEIs), mainly undergraduate. Higher education institutions have a responsibility beyond ensuring that students are well-informed in a particular academic field to ensure that they are labor market-ready (Cheng et al., 2021). Higher education is valuable because it prepares students for the workforce by acquiring job-related skills and talents (Woya, 2019). In today's global market, skills and abilities are highly valued (Gequinto & Mads, 2019).

Information technology (IT) and computing are rapidly growing industries with more job openings than qualified people. Due to the rapid rate of technological change, students must be taught in a safe setting by educators who are up to date on the latest technical innovations (Mardis et al., 2017). To meet the difficulties of advancement in the

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Philippines, the Commission on Higher Education- Memorandum Order No. 15 series 2015 indicates the attributes necessary for its IT graduates to cope and meet with changing needs of the IT industry both within the national to cross-cultural boundaries (Commission on Higher Education [CHED], 2015).

Various research studies have identified skills and competencies necessary for the IT industry. Assheim et al. (2012) state that the IT program's core skills and knowledge areas have not changed considerably in the past five years. They are operating systems, security, hardware, networking, and database. In addition, IT programs should include coverage of technology trends and their impact. One noticeable change is the lower programming ranking, typically considered part of the IT core, concerning other technical skills listed on the survey. However, programming did not change in average importance statistically. According to McMurtrey et al. (2008), IT experts consider soft skills more significant than technical abilities for effective entry-level employee integration. According to Gallagher et al. (2010), basic abilities are vital for being employed, but their relevance fades over time, and these talents are less likely to be kept by the business. Programming was the skill sought when hiring at the entry-level. Technical and non-technical skills lay the groundwork for what was recently termed a "versatilist," someone with a grounding in technology who understands an organization's environment (Problem/Opportunity skills).

A versatilist can deliver value-adding IT initiatives (Project Management skills) and build and maintain internal and external relationships (Relationship skills). Individuals with a requisite skill variety are expected to be the most sought-after IT professionals. According to Lee and Mirchandani (2015), skills in wireless communication and applications, mobile commerce, security, web applications, and data management are becoming more critical. The year 2020 began with the acceleration of digitization. Digital skills have been recognized as critical for post-pandemic work. Building digital skills across society can provide opportunities for individuals who have been historically 'left behind' and allow businesses to fully utilize technology to achieve their goals, encouraging diversity, equity, and inclusion. However, it is equally critical to build digital skills across society in a way that includes other crucial talents (such as resilience, creative thinking, and emotional intelligence (Minčičová, 2020).

According to Assheim et al. (2012), with the attributes mentioned above being necessary for the IT industry, another area of research is to compare the skill ratings for employers. This will highlight some key differences between essential skills/traits for students in degree programs. More so, compliance of universities, and other institutions, in terms of updating curriculum based on prescribed guidelines to meet the skill needs of recent IT graduates are necessary (McMurtrey et al., 2008). Javier (2015) and Cheng et al. (2021) suggested a study that may look into employability in light of the graduates and the employers to acquire a holistic point of view on the necessary skills by the IT professionals.

Transformations in the industry occur in the new future triggered by COVID-19 (Malinao & Ebi, 2022). Because of the shift in essential skills and abilities brought by the pandemic, a gap has formed between what businesses require and the professional profiles now available on the labor market (Goulart et al., 2021). The supply and demand sides of the labor market seek novel strategies to narrow the gap (Ismail & Mohammed, 2015).

HEIs must determine which educational innovations are required to meet market needs as a fundamental concern (Woya, 2019). For three key reasons, a fresh inquiry is significant to both the professional and academic sectors. To begin with, technology is continually evolving, and keeping up with the required IT skills is an ongoing effort. Second, earlier research has had mixed outcomes. Third, this study focuses both on the acquired and required skills, involving the perspectives of the IT graduates and employers. Thus, it is critical to identify the exact skillsets that are necessary for each of them. This will enable educators and curriculum planners to change and update their curriculum and instruction regularly, ensuring that their students acquire the skills and knowledge required to do these tasks in today's industry. Having a concrete record of the graduates' acquired skills and IT industry required attributes in this time of digitalization could come up with some concrete recommendations which may bring about improvements in university management, particularly the Information Technology program of the Private Higher Education institution in Santiago City, Philippines.

Methodology

Research Design

This research used quantitative research method, emphasizing objective measurements and numerical analysis of data collected on acquired attributes, demographic profiles of BSIT graduates from a Private HEI and industry require attributes. This research gathered data on the graduates' required attributes that suited them for IT employment. The descriptive and comparative research designs were used in this study. The descriptive design method was used to determine the acquired attributes of BSIT graduates. It was also designed to distinguish the attributes that the industry looks for its employees. On the other hand, the comparative design was utilized to highlight the considerable differences in BSIT graduates' acquired attributes when categorized according to their demographic profiles.

Research Environment

This study was carried out in Santiago City, Philippines, where the BSIT graduates of a Private Higher Education institution in Santiago City, Philippines from 2017 to 2020 commonly work. To gather acquired attributes of BSIT graduates, to make the study more feasible, it was also conducted through an online survey to connect and reach out to the alumni most possibly and easily. On the other hand, a personal distribution of survey instruments was conducted among the local stakeholders of Santiago City as they are the most probable employers of these graduates. Following the IATF specified health guidelines, the drop and collect method was employed to collect data from industry partners. Drop and collect refers to distributing self-completion questionnaires by hand and retrieving them.

Research Respondents

This study had two sets of participants: the graduates and the industry. The respondents for the graduates were the BSIT graduates batch 2017 to 2020 from a Private Higher Education institution in Santiago City, Philippines. Forty-five (45) or 80% of the target BSIT graduates participated in the survey. On the other hand, 26 companies located in Santiago City were the respondents who represented the industry's response regarding their competency requirements for hiring an applicant for an IT position. The respondents selected were from tech-related companies that employ IT staff. It can be gleaned from table 1 the profile of the BSIT graduates. It can be seen that majority of the BSIT graduate respondents are 21-29 years old, female, single, and employed- working in IT-related fields.

Table 1. Profile of the Bachelor of Science in Information Technology Graduates

Age	**Frequency**	**Percentage**
18 - 20 Years Old	1	2.2
21 - 29 Years Old	42	93.3
30 - 39 Years Old	2	4.4
Total	45	100
Sex		
Male	21	46.7
Female	24	53.3
Total	45	100
Marital Status		
Single	36	80.0
Married	9	20.0
Total	45	100
Employment		
Employed, Working in a Related Field	20	44.4
Employed, Not Related	14	31.1
Searching For a Job	8	17.8
Not Employed, Not Searching	3	6.7
Total	45	100

Research Instruments

The study used two sets of instruments: for the BSIT graduates and for the Industry Partners. Both data gathering tools were researcher-made instruments that underwent validation processes such as expert pooling, refinement, field-testing, and final refinement. Inventory of the acquired attributes of the BSIT graduates and required attributes by industry partners were patterned from the Commission on Higher Education Memorandum Order (CMO) Number 25 Series of 2015 and the employability study of Information Technology Graduates of Cagayan State University at Lal-Lo. The questionnaire was developed using the 4-point Likert scale. Varying attributes from computer problem-solving skills, design and development of solutions, modern tool usage, individual and teamwork, communication, and lifelong learning were used. A total of 24 indicators were used to determine the acquired attributes of IT graduates and required attributes by the IT industry.

For preliminary validation, three experts were consulted. Their feedback and suggestions were integrated into the field test instrument. As an initial test of the final version of the questionnaire, a trial test of the research instrument was done. The reliability test was determined through Cronbach's alpha. The minimum acceptable value for Cronbach's alpha is .70. Below this value, the internal consistency of the standard range is low.

Meanwhile, the maximum expected value is 0.95; above this value is perceived as redundancy or duplication. Several products measure the same construct element; the redundant elements must be removed at both. The measure's dependability scores were over 0.70 (=.912). The measures' convergent and discriminant validity were both within acceptable limits. The composite reliability was more significant than 0.7, indicating convergent validity. High values of the square root of the average variance explained supported discriminant validity. Thus, the tool as a whole and by sections are valid and reliable.

Data Analysis

Data were collected, tallied, treated, and analyzed using the SPSS. The confirmatory factor analysis (CFA), mean score, rankings, t-test, and ANOVA were utilized in the study.

Findings / Results

Confirmatory Factor Analysis

Tables 2A and 2B show the findings of the factor analysis used in the study. The Confirmatory Factor Analysis also comprises other tests, such as the KMO test and Bartlett's analysis.

Table 2A. Confirmatory Factor Analysis Results

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.718
Bartlett's Test of Sphericity	Approx. Chi-Square	664.931
	df	276
	Sig.	.000

Table 2B. CFA Results - Factor Loadings

Variable	F1	F2	F3	F4	F5	F6
V1	.678					
V2	.761					
V3	.802					
V4	.819					
V5		.835				
V6		.801				
V7		.647				
V8		.724				
V9			.662			
V10			.654			
V11			.828			
V12			.750			
V13				.781		
V14				.799		
V15				.885		
V16				.815		
V17					.831	
V18					.713	
V19					.747	
V20					.666	
V21						.741
V22						.823
V23						.749
V24						.729
Eigenvalues	9.003	1.96	1.89	1.43	1.37	1.10
% of Variance	37.51	8.162	7.860	5.97	5.70	4.54
Cumulative %	37.51	45.63	53.53	59.50	65.20	69.74

Table 2A shows the findings of the factor analysis, which reveal that the sampling is adequate for research, with a value of .718, which is greater than .50, according to the Kaiser-Meyer-Olkin Measure of Sampling Adequacy. Second, Bartlett's Test of Sphericity statistical significance is .000, showing that the correlation matrix is factorable and rejecting the null hypothesis that the original correlation matrix is an identity matrix.

Confirmatory factor analysis of the sample data yielded a six-component result corresponding to the latent variables recommended for this study. Table 2B shows each latent variable's factor loadings, with at least 0.6. According to Alkhawaja et al. (2020), the factor loading for each item in an established item should be 0.6 or greater.

Required and Acquired Attributes of BSIT Graduates

The acquired attributes of Bachelor of Science in Information Technology graduates from a private HEI in Santiago City, Philippines, and the required IT attributes by the industry are presented in Table 2. Other skills necessary for IT related works were also identified by partner industries.

Table 3. Mean Scores on the Acquired IT Graduate Attributes and Required Attributes by the IT Industry

Acquired Attributes of IT Graduates	Mean	Descriptive Interpretation	Required Attributes of IT Graduates	Mean	Descriptive Interpretation
Computer Problem Solving and Analysis	3.57	SA	Computer Problem Solving and Analysis	3.46	SA
Design and Development of Solutions	3.66	SA	Design and Development of Solutions	3.29	SA
Modern Tool Usage	3.87	SA	Modern Tool Usage	3.87	SA
Individual and Team Work	3.27	SA	Individual and Team Work	3.72	SA
Communication	2.84	A	Communication	3.51	SA
Life-long Learning	3.20	SA	Life-long Learning	3.78	SA
Grand Mean	**3.45**	**SA**	**Grand Mean**	**3.61**	**SA**

Other Skills: *Resilience, hardware, and software troubleshooting, strategic planning, self-management skills.*

The ratings were as follows: 1.0- 1.74= Strongly Disagree (SD), 1.75- 2.49=Disagree (D), 2.5-3.24= (A) Agree, 3.25- 4.0= (SA) Strongly Agree

Graduates of the private higher education institution's BSIT program acquired the program outcomes stipulated by the Commission on Higher Education in the Philippines with an overall mean of 3.45 with a qualitative description of Strongly Agree on a four-point Likert scale. On the other hand, companies in the IT industry in Santiago City, Philippines, specified the required attributes for Bachelor of Science in Information Technology employability. Employability skills such as current tool usage, learning abilities, teamwork, communication, and design and formulation of rapid answers to specific business problems are prioritized by all employers, according to data from 26 partner agencies.

Significant Difference in the Acquired BSIT Graduate Attributes

Table 4 shows the significant differences in acquired Information Technology graduate attributes when grouped by selected demographic variables such as gender, age, marital status, and work status. Using t-test and ANOVA, findings revealed no significant differences in the BSIT acquired attributes like computer problem solving and analysis, design and development of solutions, modern tool usage, and life-long learning when grouped by age, sex, marital status, and employment status, with p-values >.05.

Table 4. t-test and ANOVA on the Significant Difference on the Acquired Attributes of BSIT Graduates when group according to select Demographic Variables

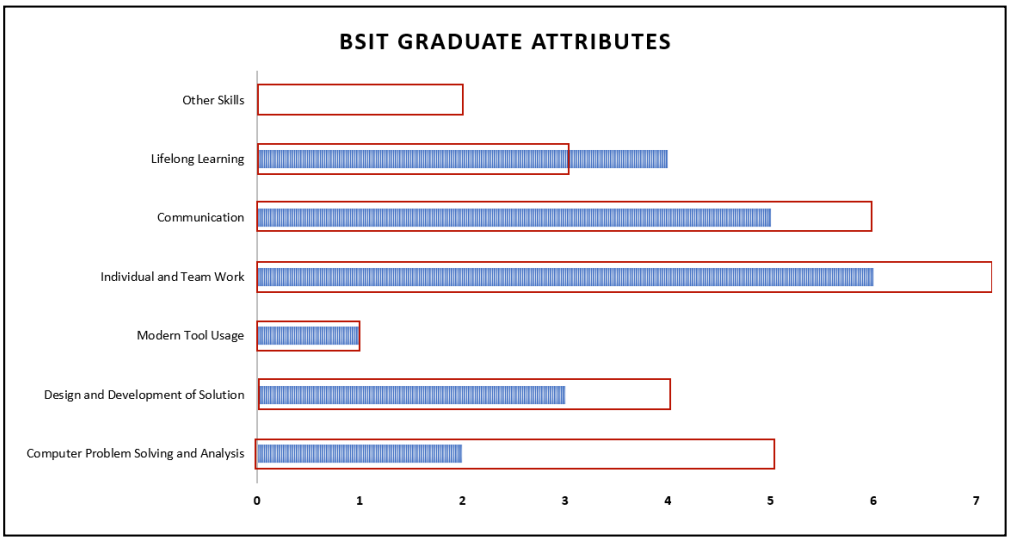
Acquired Skills of BSIT Graduates	Demographic Variables	t-value / F value	p-value	Decision
Computer Problem Solving and Analysis	Age	1.635	.207	Accept Ho
	Sex	-.591	.567	Accept Ho
	Marital Status	.279	.782	Accept Ho
	Employment Status	.920	.440	No post-hoc due to insignificance
Design and Development of Solutions	Age	1.170	.320	Accept Ho
	Sex	-.327	.746	Accept Ho
	Marital Status	-.043	.966	Accept Ho
	Employment Status	.619	.607	No post-hoc due to insignificance
Modern Tool Usage	Age	2.052	.141	Accept Ho
	Sex	-1.666	.102	Accept Ho
	Marital Status	-1.237	.270	Accept Ho
	Employment Status	.562	.643	No post-hoc due to insignificance
Individual and Team Work	Age	.604	.552	Accept Ho
	Sex	-2.423	.020*	Reject Ho
	Marital Status	.634	.529	Accept Ho
	Employment Status	.064	.978	No post-hoc due to insignificance
Communication	Age	.408	.668	Accept Ho
	Sex	-2.080	.045*	Reject Ho
	Marital Status	.449	.655	Accept Ho
	Employment Status	1.285	.292	No post-hoc due to insignificance
Life-long Learning	Age	.138	.872	Accept Ho
	Sex	-1.420	.167	Accept Ho
	Marital Status	-.399	.712	Accept Ho
	Employment Status	.052	.984	No post-hoc due to insignificance

However, the t-test results on the respondent's attributes regarding individual and collaborative abilities and communication when grouped by sex reveal significant results with p-values of <.020 and 0.045, respectively, implying that the null hypotheses are rejected. This suggests that respondents' individual and teamwork, and communication skills vary when grouped by sex.

According to the research, women have a solid ability to work independently or in groups. Bear and Woolley's (2011) study adds to the conversation by demonstrating that women thrive at working in groups. According to the data, the presence of women in the group boosts team collaboration significantly, and improvements in group processes are principally responsible for this effect. The research on how gender diversity affects team performance is more equivocal and relies on several factors. Nonetheless, given the importance of collaboration in all professions, strengthening women's positions in the area might have positive practical consequences.

Ranking on the BSIT Graduate Attributes as perceived by IT Graduates and Industry Partners

Figure 1 presents the ranking of the BSIT graduate attributes and industry-required attributes. This study assessed the acquired attributes of BSIT graduates who are now employed and the required attributes by the IT sector in an ever-evolving technological context in the professionals' digital competency.



Legend: Empty Box = IT Employers & Colored = BSIT Graduates (From 1 as most important to 7 as least important)

Figure 1. Ranking of the BSIT Attributes

Both responders were tasked with ranking the attributes in order of priority. According to the data, both respondents agreed that knowing how to use current tools is the most crucial skill in the profession.

Discussion

After data analyses, findings revealed that graduates of the Private HEI under the BSIT program could apply their business operations, computing, and mathematics expertise to the discipline. They can assess complex problems and determine and outline the computational needs required to solve them. They can discover and analyze user needs and incorporate them into computer-based system design, development, evaluation, and administration. They can design, construct, and evaluate computer-based systems, processes, components, or programs to meet specific goals and needs while working under various constraints. Graduates of the BSIT program can integrate IT-based solutions into the user environment successfully and efficiently. They can use current tools to use what they have learned in school in the workplace. They use their field's most up-to-date techniques, skills, technology, and practices. They may also function well as part of a group or team, understanding the many responsibilities that must be filled to reach a common goal. BSIT graduates, on the other hand, feel that analytical writing, presentations, and clear instructions may still improve their capacity to communicate successfully with the computing community and the broader public about complicated computer activities. BSIT graduates understand the importance of self-learning and performance improvement planning as a foundation for continuing professional development.

On the other hand, employers unanimously agreed that graduates with experience troubleshooting hardware and software would have an advantage over other applicants during the hiring process. The data also reveals that strategic planning is critical in this time of distress. In addition, they must be resilient and capable of managing themselves. This means that graduates' university-acquired abilities and competencies are applicable and appropriate for the industry's desired attributes.

The findings of the study are similar to the study of Albina and Sumagaysay (2020), Olfindo and Belgica (2017), Gequinto and Mads (2019), which state that communication skills are the most important skill they learned in college and found beneficial in their profession. Other characteristics may arise if a person has a positive attitude and a desire to learn. Working with people, forging teamwork, and developing a solid team relationship comprise most of the top-rated character attributes for professional efficacy created throughout their time at the institution. Resilience and capability of managing oneself, such as dealing with disappointments, taking on leadership responsibilities, and managing emotions, are significant, similar to the study findings.

On the other hand, findings on the employers' required attributes are similar to those of the studies of Albina and Sumagaysay (2020) and Deblois (2021). Teamwork, problem-solving, planning, communication, and taking responsibility. Personal ethics, such as honesty, integrity, and trustworthiness, are also expected in an interview, and interpersonal skills are valued far more than other qualifications. Employers place a premium on values and commitment indicators such as interest in the company and shared company values. These indicators indicate that employers' evaluations of what and who is employable are open to interpretation. According to companies, graduates should be service-oriented, adaptable, ICT proficient, have mastery of the material, quickly adapt to the educational environment/workplace, be willing to be trained, and have the right attitude and talents that require the most curricular focus are entrepreneurial ability, critical thinking skills, problem-solving skills, and human relations skills. More so, Misra and Khurana (2017) and Jafar et al. (2019) claims that technical skills such as specialized skills and knowledge to adapt, relatively high thinking skills such as work-related understanding, learning, reasoning, creativeness, strategic planning, problem-solving, people skills such as knowledge, trustworthiness, self-control, self-confidence, psychological literacy, leadership, people/social skills such as team building, respect, ethics and values, collaboration, emotional intelligence, socially conscious, generic skills such as command structure, team working are essential and necessary for the IT graduates to be employed in the field.

Conclusion

The study indicates no significant disparity between the required professional attributes by IT firms and those formed by HEIs as stipulated by the CHED Memorandum Order, as evidenced by the acquired attributes of IT graduates from private HEIs. The capacity to use technologically advanced tools, computer problem-solving skills, analysis, design, and creation of solutions, as well as continual learning, communication, and individual and teamwork are the necessary attributes acquired by the graduates of the Private HEI and the required attributes of the IT industry. In addition, resiliency, hardware and software troubleshooting, strategic planning, and self-management abilities were also included as extra skills to thrive in the IT sector. Thus, HEIs play a critical role in assisting students in developing a professional career path. The study's findings may be helpful for curriculum planners to align course offerings with the demands of the changing industry. The consideration and application of derived recommendations from this study will serve as a guideline and resource that enables self-reflection, stimulates new ideas, and perceive the specific or target areas that should be emphasized in the IT curriculum.

Recommendations

Based on the study's findings, specific recommendations were made to improve the graduate qualities of the Private HEI's Bachelor of Science in Information Technology program. First, a regular review of the curriculum objectives, activities, and outputs should be conducted to ensure that graduates develop competencies in the various academic courses. Second, the placement component of the Guidance program should be strengthened and intensified in assisting graduates with their job applications. Third, the campus should work with potential agencies and companies to assess their skill requirements among graduates, thereby expanding their graduates' careers options. Fourth, students' hands-on, on-the-job training needs to be improved to expose them to the real-world workplace scenario, detect developing and changing demands and competencies, and diversify their skill development. Finally, industry partners must be included in the curriculum revision to share their perspectives and preferences.

For further studies, future researchers may identify all programs, projects and enhancement activities provided by the university to capacitate students during their stay in the university. They may also enlist the help of employers where graduates are currently employed to improve their employees' performance. A complete count of responses is required. Correlations or regressions could be introduced to see what specific ability helped the graduates perform well in the workplace. An assessment of the compliance to different standards of different industries in terms of software and hardware may also be conducted. Lastly, the study may identify specific courses/subjects that enable graduates to compete in the workplace. Researchers may also identify specific attributes at every management level in the IT industry. An in-depth study of oral and written communication and its practical applications may be conducted.

Limitations

The study is limited to the acquired attributes for information technology graduates prescribed by the CHED in the Philippines and the required attributes in the information technology industry. More so, the sample for this study for industry respondents was drawn from 26 firms that recruit IT employees in Santiago City, Isabela, Philippines. Most of

these businesses operate only within the locality; this sample size may have limited generalizability to the population of all business concerns.

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Appendix

Inventory of Acquired attributes of BSIT Graduates

1. The program developed my computing, science, and mathematics knowledge.
2. The program helped me understand the IT industry's best practices, standards, and applications.
3. The program developed my problem-solving skills.
4. The program helped me to feel confident about tackling unfamiliar problems
5. The program helped me learn how to analyze complex problems and identify and define the computing requirements appropriate to its solution
6. The program developed my ability to identify and analyze user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems
7. The program taught me how to document software and hardware requirements specifications, following the computing industry standards
8. The program developed my skills in designing, implementing, and evaluating computer-based systems, processes, components, or programs to meet the desired needs and requirements under various constraints
9. The program taught me how to integrate IT-based solutions into their user environment effectively
10. The program taught me to design and develop a computing solution through computer programming
11. The program enabled me to apply my knowledge through the use of current techniques, skills, tools, and practices necessary for the IT profession
12. The program taught me to use an integrated development environment.
13. The program helped me function effectively as a member or leader in a development team, recognizing the different roles within a team and accomplishing a common goal.
14. The program taught me how to be a team player who assists in the creation of an effective IT project plan.
15. The program helped me to develop my ability to work independently.
16. The program allowed me to socialize with others.
17. The program developed my ability to communicate effectively with the computing community and society about complex computing activities through analytical writing, presentations, and clear instructions.
18. The program developed my skills in presentation and public speaking
19. The program improved my communication skills (written, communication, presentation, etc.)
20. The program helped me learn how to analyze computing information technology's local and global impact on individuals, organizations, and society.
21. The program helped me understand professional, ethical, legal, security, and social issues and responsibilities in utilizing information technology.
22. The program immersed/exposed me to an actual working environment in the industry
23. The program improved my recognition of the need for engagement in planning self-learning and improving performances as a foundation for continuing professional development.
24. The program helped me create a report on a conducted independent learning activity.

Inventory of Industry Required Attributes

1. The candidate should be knowledgeable in computing, science, and mathematics.
2. The candidate should understand the best practices and standards of the IT industry and its applications.
3. The candidate should be with good problem-solving skills
4. The candidate should be confident about tackling unfamiliar problems.
5. The candidate should be able to analyze complex problems and identify and define the computing requirements appropriate to its solution.
6. The candidate should be able to identify and analyze the user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems.
7. The candidate should know how to document software and hardware requirements specifications, following the computing industry standards.
8. The candidate should be knowledgeable in designing, implementing, and evaluating computer-based systems, processes, components, or programs to meet the desired needs and requirements under various constraints.
9. The candidate should know how to effectively integrate IT-based solutions into their user environment.
10. The candidate should know how to design and develop a computing solution by computer programming.
11. The candidate should be able to apply my knowledge through the use of current techniques, skills, tools, and practices necessary for the IT profession.
12. The candidate should know how to use an integrated development environment.
13. The candidate should function effectively as a member or leader in a development team, recognizing the different roles within a team and accomplishing a common goal.
14. The candidate should be a team player when creating an effective IT project plan.
15. The candidate must be able to work with less supervision.
16. The candidate should know how to mingle and socialize with his/her co-employees.
17. The candidate should communicate effectively with the computing community and society at large about complex computing activities through analytical writing, presentations, and clear instructions.
18. The candidate should be able to present his/her ideas.
19. The candidate should be able to communicate his/her ideas in written and oral communication.
20. The candidate should know how to analyze computing information technology's local and global impact on individuals, organizations, and society.
21. The candidate should know professional, ethical, legal, security, and social issues and responsibilities in utilizing information technology.
22. The candidate should be able to adjust to the actual working environment in the industry.
23. The candidate should be able to engage in planning self-learning and improving performances as a foundation for continuing professional development.
24. The candidate should be able to create a report on a conducted independent learning activity.