Exploring 21st-Century Skills and Competencies of Information Technology On-the-Job Trainees: Basis for Program Enhancement

Billy S. Javier, PhD.
Faculty of Information and Computing Sciences
Cagayan State University at Aparri

Abstract

On-the-Job Training is a course designed to put into real-life environment the skills and knowledge acquired in the classroom and are further enhanced in the training workplace. The study looked at the 21st-century skills and competencies of the 112 senior On-the-Job Trainees for the SY 2016-2017, their OJT performances as well as issues concerning OJT. Descriptive-survey method with focus group discussion and casual interviews were utilized. The questionnaire was adopted from CHED CMO 53 s2006 and in related literatures. Majority of the respondents were females, taken courses along multimedia track (56.25%), and obtained a satisfactory remark along IT Professional (86.88) and communication (86.44) subjects. Most of the respondents were deployed either along regional and provincial offices, and were generally performing excellently during their 486 hours training. The self-assessed skills developed during the on-the-job training revealed a very satisfactory (3.85), satisfactory (3.40) conceptual skills, very satisfactory (3.52) analytical skills, team related skills (4.0), leadership skills (3.72), and interpersonal skills (4.05) respectively. Along CMO-based skills and IT competencies, the respondents disposed a satisfactory (3.19) personal skills, interpersonal skills (3.26), and satisfactory remark along technical understanding (2.94). The 21st-century skills and IT competencies of the On-the-Job trainees was being improved further from the learning competencies in the classroom and the actual learning experiences in the cooperating agencies. On-the-Job Training program provided a holistic experience to students to further advanced the skills and job competencies of future Information Technology professionals.

Keywords: On-the-Job Training, 21st-century IT skills, technical skills, Information Technology

Introduction

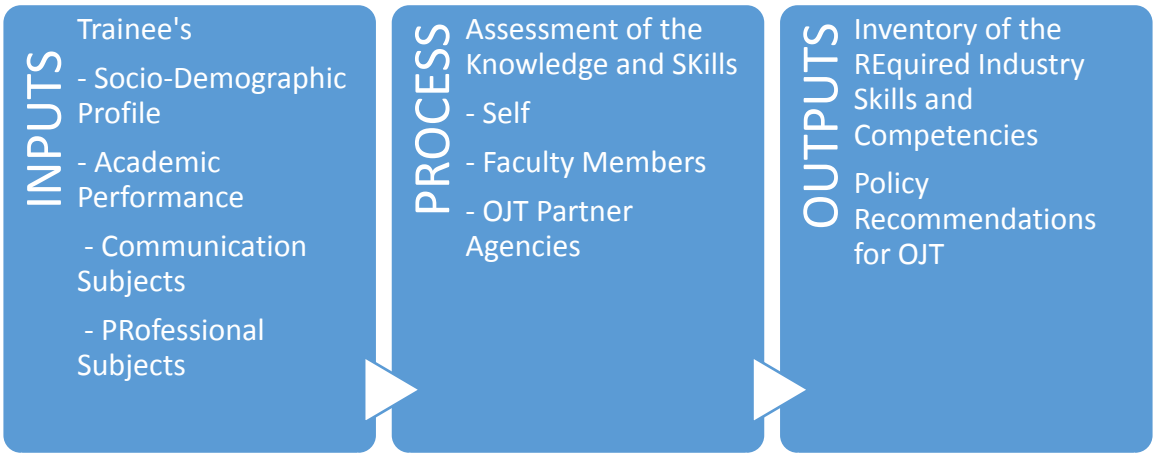
Information Technology has a wondrous contribution to great fast changing lives of today. The great innovations it brought about that people boasts into it. The world is now a rapid-paced change in society and fast way life in which non-stop discoveries and additions of computers, laptops, tablets and cellular phones, will give you more access information anytime and anywhere. These technologies were brought to people by different developers, programmers, scientist and other computer related experts. A good developer of course had undergone so many experiences, trainings and of course before having a job; they must undergo with the internship or so called OJT means On-Job-Training.

In a classroom, the learning process takes place for how many long hours of sitting and discoursing about anything related to academics. But college life doesn't wind-up by just learning the theories; they apply then through training that will present us the picture of our chosen Career-On-The-Job-Training. It is one way by which student is given an opportunity to apply the theories and computations that they have learned from school. It also helps students to obtain applicable knowledge and skills by performing in actual work setting. Colleges and universities require their students to undergo such training within a specific number of hours as part of the curriculum. Information Technology serves an opportunity for them to improve and reinvent themselves, growing better for the challenges of the future.

For students, an OJT or internship program provides opportunities to go through the actual methodologies of a specific job using the real tools, equipment and documents. In effect, the work place becomes a development venue of student trainee to learn more about their chosen field and practice what they have learn from academy. On the other hand, a valuable OJT program also profits the companies who accept trainees. Most of them are all eager to learn the ropes so chances are high that they'll be given a chance to work on the same company as an employee after graduating. Employers can use this internship strategy as method in recruiting employees. Since the trainer or supervisor can follow the trainees' progress, he can gauge based on performance, behavior and attitude if the trainee will make good recruit after the completion of his internship.

Cagayan State University-Aparri offers BSIT and this is the reason why its enrolment data is greatly increasing. High percent of the student take the course because it is in demand in our country and abroad. An Information Technology graduate can be a data encoder, system analysts, instructor, network administrator, web page developer and programmer with skills and knowledge on computer related works like web developing, programming, networking, photo editing, Visual Basic and encoding. The question is, are the fourth year college students of BSIT are competent and prepared enough to have the OJT?

On the job training is one way by which student, is given an opportunity to apply the theories and computations that they have learned from school. It also helps students to obtain applicable knowledge and skills by performing in actual work setting. Colleges and universities require their students to undergo such training within a specific number of hours as part of the curriculum. Information Technology serves an opportunity for them to improve and reinvent themselves, growing better for the challenges of the future. It is for the benefits of school administrator, Students, Faculty and Future Researchers. With the changing role of IT in the society and workplace, the study has looked into the 21st century skills and competencies of the Information Technology on-the-job trainees of Cagayan State University at Aparri which hopes to provide inputs for program enhancement as well curriculum development.



Specifically, the study sought to determine the social-demographic profile of the respondents, their academic performances along communication and professional subjects, as well as their assessment of their skills along communication, conceptual, analytical, team-work, leadership, interpersonal skills, and technical understanding. From these, suggested interventions shall be drawn for the purpose preparing OJT to partner agencies.

Findings of the study shall provide an ample information to OJT coordinators of the required skills and competencies required from the would-be trainees so that proper selection and deployment will be ensured. As faculty plays a major role in the development of the skills and knowledge of the would-be trainees, it is important that thru the recommendations of the study, faculty members will devise teaching and learning mechanisms that will entail outcomes-based and industry-specific learning practices. Hence, in the delivery of the instruction, the inputs from the study will have to be cascaded back to the classroom for instructional enhancement. Administrators may consider the results of the study in the possible academic and industry partnership that will not only look into career enhancement of the students, but for faculty members to be exposed too to internship so that much learning process and inputs to instruction will be better established. Cooperating agencies and partner organizations will be benefited since they will be considering those trainees equipped with the necessary knowledge and skills they needed. Better office turnaround will be made, producing quality CSUan learning experiences in the actual field.

METHODOLOGY

The study utilized descriptive-survey research design. The questionnaire, as a principal tool obtained the perceived knowledge and skills of the OJT trainees. A questionnaire for the test of knowledge and skills of the trainees upon termination of the OJT training program was used. Frequency counts, percentages and weighted mean were used to describe the variables of the study.

Participants were the 112 on-the-job trainees chosen thru stratified random sampling. Three strata each represented the IT tracks of the OJT students; web development, multimedia, and programming tracks. The listing of the students per track was taken from the registrar, and from there systematic sampling was used for the sample. The

questionnaire was based from the required skills and competencies under the CHED CMO 53, s2006.

RESULTS AND DISCUSSION

The profile of the respondents as presented in Table 1. The respondents were predominantly females (70.5%) outnumbering their 33 male counterparts. Of these, 63 were into multimedia tracks (65.8% females and 33.3% males), 36 were into web development track (21 females and 15 males), and 8 were into programming track (7 males and 1 female). With the 2013 BSIT curriculum, the multimedia track were likely chosen by the respondents because of the relief in doing complex programming tasks, diversity of multimedia activities (e.g. animation, photo/audio/video editing, graphics), and that the track institutes creativity in variety of arts, video, film, audio, graphics and other multimedia platforms.

Table 1: Some Profile Characteristics of the Respondents

	Male (33)	%	Female (79)	%
Civil Status				
Single	32	97.0	78	98.7
Married	1	3.0	1	1.3
IT Track				
Multimedia Track	11	33.3	52	65.8
Programming Track	7	21.2	1	1.3
Web Track	15	45.5	21	26.6
GWA Professional				
Very Satisfactory	2	6.1	3	3.8
Satisfactory	21	63.6	46	58.2
Fair	8	24.2	30	38.0
Poor	2	6.1	0	0.0
Mean	87.00		86.82	
Overall Mean	86.88			
SD	0.249			
GWA Communication				
Very Satisfactory	0	0.0	5	6.3
Satisfactory	15	45.5	35	44.3
Fair	18	54.5	39	49.4
Mean	86.36		86.47	
Overall Mean	86.44			
SD	0.216			
Family Monthly Income				

Less than 5000	9	27.3	26	32.9
5001-10,000	10	30.3	20	25.3
10001 – 15000	3	9.1	0	0.0
15001 – 20000	3	9.1	2	2.5
Above 20000	0	0.0	5	6.3
No Answer	8	24.2	26	32.9
Overall Wean	8805.128			
SD	869.42			
Agency of Deployment				
Regional Government Center/Offices	8	24.24	18	22.78
Provincial Government Center/Offices	5	15.15	20	25.32
Local Government Center/ Offices	11	33.33	19	24.05
GOCC	5	15.15	11	13.92
School / University	4	12.12	11	13.92
OJT Performance (Supervisors)				
Outstanding	10	30.30	34	43.04
Very Satisfactory	23	69.70	45	56.96
Mean	92.36		91.65	
Overall Mean	92.005			
SD	0.106			

The general performance of the respondents regardless of track were taken into account to determine its effect to taking OJT as well as skills and competencies. With an overall mean of 86.88, the respondents were generally satisfactory. Males were generally performing better (87.0%) than females (86.82). In addition, communication is important when dealing with people and relations to working environment. Hence, the study determines the significance of communication subjects to OJT as well as honing the skills and their competencies. With an overall mean of 86.44, respondents were found satisfactory along communication subjects. The courses satisfactorily provided technical competencies and preparations to trainees relevant to speaking or engaging to people, writing communications or preparing reports, listening and reading abilities as well. In general, the trainees were found satisfactory both along professional and communication courses.

Financial support greatly aids to completing a degree or a course. The study described the family monthly income 78 honest and conservative responses, still substantive to generalize, rather than just 34 blank responses (those who opted to put black). While most of the parents' source of income were into farming / fishing, it comes no surprise to note that majority earned a meager monthly income between P 5,001.00 to 10,000.00 with a mean of P 8805.13. This would somehow affect support to trainees and other school or training needs.

Most of the respondents were deployed along local government centers or offices (26.78%). While others attributed this to the financial constraints experienced by them, respondents looked at these agencies as potential working environment soon as they graduate, and the fact that the local offices within Aparri such as the sub-offices could also provide the learning experience the trainees would established in the regional setting. Majority of those deployed in the regional offices (23.21%) were along cooperating agencies with which the name of CSU Aparri particularly OJT of the IT program has established an outstanding niche and performance through the years. Those deployed along the schools or in CSU at Aparri (13.39%) were those respondents with issues along incomplete grades.

The very satisfactory (92.005) performance of the trainees were greatly attributed to the skills, attitudes, and working performances of the trainees as seen along the comments and evaluation made by the supervisors or HR representative. Majority of the females (43.04%) recorded an outstanding performance during their on-the-job training. This is attributed to their diligence in work, and commitment.

Table 2: Self-Perceived Assessment of the Skills Developed during the On-the-Job Training

OJT Skills	Male (33)	Verbal Interpretation	Female (79)	Verbal Interpretation	Overall Weighted Mean	SD	Verbal Interpretation
Communication Skills							
Speaking Skills	3.55	VS	3.75	VS	3.69	0.760	VS
Listening Skills	3.97	VS	4.19	VS	4.13	0.699	VS
Writing Skills	3.73	VS	3.96	VS	3.89	0.752	VS
Preparation Skills	3.70	VS	3.72	VS	3.71	0.621	VS
Conceptual Skills							
Software Privacy Law	3.73	VS	3.22	S	3.37	0.689	S
Cybercrime Law	3.79	VS	3.37	S	3.50	0.777	S
Computer Ethics	3.85	VS	3.49	VS	3.60	0.792	VS
Software Engineering Commandments	3.64	VS	3.31	VS	3.41	0.755	VS
Software Quality (ISO 9124)	3.30	S	3.04	S	3.12	0.686	S
Analytical Skills							
Numerical Analysis	3.55	VS	3.41	VS	3.45	0.710	VS
Problem-Solving Skills	3.76	VS	3.44	VS	3.53	0.724	VS
Critical-thinking Skills	3.88	VS	3.41	VS	3.55	0.723	VS
Reflective Thinking	3.70	VS	3.47	VS	3.54	0.711	VS
Team-Related Skills							
Employee relations and management	4.09	VS	3.96	VS	4.00	0.658	VS

Providing support and motivation to others	3.88	VS	4.00	VS	3.96	0.734	VS
Ability to contribute to the success of a team	4.06	VS	4.03	VS	4.04	0.747	VS
Working with peers and superiors efficiently and effectively	3.85	VS	4.04	VS	3.98	0.778	VS
Leadership Skills							
Planning and analysis skills	3.97	VS	3.64	VS	3.74	0.616	VS
Conflict management skills	3.55	VS	3.54	VS	3.54	0.721	VS
Managerial and staffing skills	3.52	VS	3.48	VS	3.49	0.735	VS
Ability to follow instructions effectively	4.21	O	4.05	VS	4.10	0.735	VS
Interpersonal Skills							
Ability to control and management of oneself	3.82	VS	3.96	VS	3.92	0.850	VS
Adaptability to working environment	3.85	VS	3.97	VS	3.94	0.739	VS
Possess good manners and right conduct	4.27	O	4.32	O	4.30	0.733	O
Passion for service to the organization and industry	3.91	VS	4.06	VS	4.02	0.828	VS

On-the-Job training provided an avenue to trainees better enhance or acquire skills on a daily basis. The study had recorded the self-perceived skills being developed during the On-the-Job Training for 500 hours. Respondents both generally perceived to a very satisfactory communication skills (3.85). Being able to communicate is important especially when dealing with people, thus the program able to cultivate the required speaking, listening, reading and writing skills. Though found satisfactory 4.0, males recorded a very satisfactory (3.66) conceptual skills than the satisfactory (3.29) remarks among females. Having put into practice the concepts learned in the classroom is an indicator of the effectiveness of instruction augmented through OJT which further validates learning by doing. Analytical skills developed during the training period both recorded very satisfactory (3.52) among male and female. It's noteworthy to underscore the cultivation of 21st-century analytical skills of the trainees which are eventually an essential skills demanded by the job market. Teamwork projects in the school requires collaboration towards innovation. A substantial evidence presents a very satisfactory (4.0) remarks conveyed by both the respondents. Practical relations, motivation, working with peers and superior eventually makes a good team spirit developed among the trainees. Leaders are never born because they are made. The trainees were able to further found in and among themselves necessary leadership skills with a very satisfactory report. Although, it can be observed an outstanding performance among trainees (4.21), it is with OJT that trainees gainfully utilized their communication and interpersonal skills very satisfactorily (4.10). In the later part of this paper, interpersonal skills among trainees also reported a very satisfactory response which recorded 3.91 among male and 4.06 among females.

Table 3: Self-Perceived Assessment of the of the CMO-based IT Skills and Competencies

	Male	Adj. Value	Female	Adj. Value	Overall W. Mean	SD	Overall Adj. Value
Personal Skills							
a. Personal –discipline skills	3.67	VS	4.06	VS	3.64	0.534	VS
b. Critical thinking skills	3.30	S	3.08	S	3.14	0.598	S
c. Inter-and-intra personal skills	3.21	S	3.14	S	3.16	0.608	S
d. Problem-solving skills	3.24	S	2.96	S	3.04	0.509	S
e. Planning and organizing skills	3.67	VS	3.09	S	3.09	0.571	S
f. Ethical thinking	3.24	S	3.06	S	3.12	0.583	S
g. Entrepreneurial thinking	3.06	S	3.00	S	3.02	0.519	S
h. Innovative	3.30	S	3.08	S	3.14	0.582	S
i. Perseverance in pursuing goals and continuous improvement	3.48	VS	3.30	S	3.35	0.588	S
Interpersonal Skills							
a. Team work and collaborative skills	3.52	VS	3.53	VS	3.53	0.586	VS
b. Oral and written communication skills	3.24	S	3.16	S	3.19	0.637	S
c. Conflict resolution skills	3.15	S	3.03	S	3.06	0.622	S
Technical understanding							
a. System Analysis and Design	3.33	S	2.96	S	3.07	0.628	S
b. Operation of databases	3.24	S	2.82	S	2.95	0.669	S
c. Operation of computer networks	3.15	S	2.84	S	2.93	0.68	S
d. Operation of multimedia systems	3.21	S	2.96	S	3.03	0.734	S
e. Software integration, testing and documentation	3.09	S	2.91	S	2.96	0.673	S
f. Systems management and administration	3.00	S	2.71	S	2.79	0.659	S
g. Principles of accounting	2.97	VS	2.83	VS	2.87	0.636	S

The assessment of the on-the-job trainees of their skills and competencies as required by the CHED CMO 53, s2006 disclosed the acquisition of such from the classroom and the cooperating agency where the respondents were deployed. While personal skills normally emanates within the respondents themselves, most of these are greatly honed in school, the family, and the environment he/she lives with. Though the self-perceived assessment revealed a generally satisfactory (3.19) remark, it's interesting to note the very satisfactory personal-discipline skills possessed by both male (3.67) and female (3.64) respondents. In addition, the planning and organizing skills (3.67) has been assessed very satisfactory among males, as well as their perseverance in pursuing goals and continuous improvement (3.48). This finding could be attributed to the challenging and exciting windows of programming and other diversified IT capabilities male students look after especially when challenged and the critical – thinking skills attributed among males. It is believed that classroom instruction thru the Information Technology program has augmented the need to improve and advance personal skills of the trainees.

The relational and social skills of the respondents allowed them communicate and do proactive team activities, mingling with different people in the working environment, as well as dealing with and

resolving conflicts. With an overall weighted mean of 3.26, the respondents were generally satisfactory underscoring their team work and collaborative skills both seen among male (3.52) and female (3.53) respondents. The different classroom activities, design and development of IT projects, collaborative research as well as IT Capstone Projects among senior students greatly prepared and developed the students along their team work and collaborative skills. The BS Information Technology program has indeed prepared the respondents to be communicators and collaborators.

The technical understanding of the respondents showed a satisfactory (2.94) remark both among male and females. Though the concepts within these areas were encapsulated in the IT curriculum of CSU at Aparri, it could be an indication of the need for a well-rounded classroom instruction that could better improve and elevate the technical understanding of the respondents especially when they are being immersed in the cooperating agency.

Conclusion:
The College of Information and Computing Sciences, particularly the BS Information Technology program has prepared the students equipped with the skills and competencies especially when exposed to On-the-Job Training which eventually showcased an outstanding performances amongst them. The OJT program has holistically enhanced the learned skills in the classroom through the varying activities in the training environment particularly along required 21st-century IT skills, problem-solving, teamwork, critical-thinking, and collaboration.

Recommendation:
The administration of the College may look at enhancing delivery of instruction which better improve and inculcate the technical understanding of IT courses as well as improving further their communication and interpersonal skills. IT teachers should consider inculcating the workplace skills in the differentiated activities embedded in daily instruction. On-the-Job Training partner agencies should continue to provide their trainees a holistic and applicable learning experiences deemed necessary to trainees to being comparable and marketable after graduation.

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