

Assessment of UA graduates' skills in the workplace: Input toward the re-engineering of 21st century curricula

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Abstract

Assessment of graduates' 21st century skills in the actual workplace is a very vital academic institutional endeavor that provides significant input to curriculum development. This descriptive-correlation study assessed the competencies of the graduates of the University of the Assumption (UA) from the lens of industry employers. A total of 221 graduates were assessed by 26 industry supervisors from 11 industry types. Results show a favorable evaluation of the UA graduates on their cognitive, interpersonal, self-task management skills and personal characteristics. Specifically, they tend to display high evidence on cross-cultural skills, ethics, self-direction skills and accountability for high standards. While there is no significant difference among the gender and batches, a significant positive correlation was found between UA graduates' 21st century skills rating and their job performance. The strongest correlates to job performance are accountability for excellence, collaboration and self-management. Prioritizing cognitive and communication skills among the graduates is recommended through curriculum enrichment.

Keywords: 21st century skills, curriculum, assessment of graduates, industry

INTRODUCTION

In the advent of ASEAN economic integration, many challenges, trends and issues in the field of education abound (Ra, 2015). Academic institutions in basic and tertiary levels have been preparing the education landscape in order for education to be more responsive in developing the necessary skills of the clientele- the students. In response to the universal call for quality education, academic institutions are challenged to prepare students to possess life-long learning skills (Peters, 2015) which will make

them competitive in the changing world (Marginson, 2004). Investments primarily on social and human capital are now being targeted as key result areas (KRAs) by many school managers which according to studies would predict participation in life-long learning (Knipprath & De Rick, 2015).

In the last decade, there were many problems and challenges relative to partnership between the education and industry sector. More graduates find it difficult in getting a job that matches with their skills and competencies. Notably, there is seemingly a universal problem in education where a number of academic institutions do not provide the necessary competencies and skills needed for employment (Marchante, Ortega & Pagan, 2007). This mismatch problem exists between the needed talents in the industry and the available graduates, who lack the skills not only to be suited but also to be competitive for the job. Needless to say, this has an alarming effect on the economies of countries across the world. Re-training and further retooling is needed by graduates in order for them to match the demands of the job and for the industry to accept them.

There are many significant education reforms and initiatives in the Philippines, such as the implementation of K to 12 (Republic Act 10533, 2013), the institutionalization of the Philippine Qualifications Framework (PQF), the issuance of the New General Education Curriculum (CMO 20, s. 2013), the upcoming referencing of national qualification framework of 10 ASEAN member states under the ASEAN Qualification Reference Framework (AQRF) by 2018 and the paradigm shift to outcomes-based education focusing on learner centered approach rather than teacher-centered approach have answered the need for Philippine education in achieving global comparability and in responding to the challenges of the ASEAN integration (CHED, 2016)

With the fast changing landscape of global alliances and networks, higher education institutions (HEIs) are challenged to offer relevant courses and innovate curricula of existing programs to be responsive to the changing and fluid industries (Warren, 2002). Proactive educational leaders are earnestly building partnerships with companies and organizations in developing agile professionals and key talents suited for the fast changing industrial standards (Paprock, Yumol & Atienza, 2006).

In order to meet the requirements of the 21st century workforce, HEIS must be able to put necessary mechanisms and relevant tools for curriculum re-engineering (Pandiyan, 2011). Industry-academe dialogues and partnerships are imperatives for a bright future. The academic community particularly CHED encourages academic institutions to conduct tracer studies of graduates.

There are numerous tracer studies on the graduates which focus only on graduates' perception and self-assessment relative to employment and curricula. Furthermore, there are also limited studies on how employers in the industry assess the graduates of an academic institution. Tracer studies from the lens of employers would show a more objective perception on how the graduates' competencies are paring with the skills needed by the company or institution where they work. This is basically a genuine feedback from the industry identifying the gaps in the education system and hopefully would affect significant positive changes in the academic institution's overall landscape.

This study is an offshoot of the UA Tracer Study 2009-2013 which recommends exploring employers' perception on UA graduates. It hopes to serve as baseline data for curriculum re-engineering and program development. The perception of graduates on the status of their employment, the quality of education they have achieved and the relevance of their respective curricula in the university presented in the UA Tracer study (2009-2013), warrants an objective assessment to this effect. In order to see the bigger picture, such perception has to be confirmed and substantiated with evidence from the lens of employers in the industry. Such cross validation using the assessment of managers in the academic institutions, hospitals, government agencies, NGOs, private business firms and other organizations, would generate a very reliable and undisputable fact regarding the status of UA graduates in terms of their competencies and skills. The findings in the assessment would help facilitate in the meaningful re-engineering and development of the curricula across programs in the University.

Based on the University's thrust of forming holistic Catholic professionals who could become leaders, and in response to the universal call for nation building, the study seeks to assess the graduates for the

past ten years (particularly batches 2005-2015) in terms of their performance in the workplace relative to the 21st century skills. Specifically, the study seeks to: 1) describe the general image of UA graduate's competencies and skills based on the perception of employers; 2) describe the graduates' general competency rating according to type of industry; 3) determine the significant relationship among graduates' assessed 21st century skills by employers; 4) determine the significant relationship between the graduates' job performance and their assessed 21st century skills; 5) determine the difference between male and female; batch 2005-2010 and batch 2011-2015 in terms of their assessed 21st century skills;

The study would provide inputs which could be used as baseline in improving the curricula and other programs of the university; that is to make them more responsive and relevant to the changing needs of the immediate and larger communities. It would help school leaders and managers in the University in re-inventing the curriculum across programs. Moreover, this study hopes to fill in the gaps between theory and practice relative to educational outcomes.

Limitations of the study

The sample population of graduates was limited to the participation of receptive and pro-active organizations which accepted and accommodated the proposed undertaking. The graduates who were assessed in the study came from batches 2005 to 2015. There are few graduates in some programs who were evaluated by employers. This has a significant effect on deferring the determination and comparison of 21st century skills of graduates across programs.

METHOD

Research design

The study primarily employed quantitative descriptive correlation design in assessing the graduates' 21st century skills. A cross-sectional sampling across 15 academic programs was adapted in choosing target

graduates who were evaluated by their respective employers from twenty six companies that participated in the research undertaking.

Participants

The participants of the study were the employers in the industry which include HR practitioners in hospitals, academic institutions, government agencies (GOs), non-government organizations (NGOs) and private firms. A total of 228 UA graduates batch 2005 to 2015, who are at least six months employed in the institution were assessed by 26 industry employers. They were evaluated by their respective supervisors and/or HR officers where they worked. In choosing evaluators, the following inclusion criteria were adopted: (a) have direct contact with employee-graduate; and (b) can provide rich information on the job performance of the said employee.

Data gathering

A letter of permission from the University President was sought to effect the approval of the undertaking with the selected organizations and/or institutions. Initially, respondents' invitation was electronically sent through their e-mail. But due to low participation of respondents, the research team opted for official company visits to intensify retrieval of questionnaires. Upon the acceptance of the head or president of the organization through the head of Human Resource Department, close coordination, monitoring and retrieval of completed questionnaires were accomplished through the assistance of research assistants. With the help of the HR head of the selected institutions, UA graduates falling within the pre-set criteria (Batches 2009 to 2014) were identified and evaluated.

Actual data gathering through scheduled trips was closely coordinated with the HR of the selected organizations. Generally, each respondent was given a week to fill out the questionnaires to be retrieved on a specified date. Written consent to conduct assessment was signed by the HR Officer upon the approval of the head or the CEO of the institution. Proper ethical protocols on the confidentiality and protection of human participants was observed properly. By using codes, names of UA graduates were kept confidential in the instrument. Only important items for profile, analysis, categorization and summary purposes such as

academic programs, age, sex and job classification appeared in the questionnaire. No mandatory participation was invoked from the participants.

Instrument

Based on the review of relevant literatures about 21st century skills, a 28-item questionnaire was developed and content validated by three experts. Observable indicators were made specific in terms of language, but remained generic in terms of scope to suit any job or profession in the industry. The instrument was based on the framework of Patrick Kyllonen (2012), National Research Council (NRC) and the National Academy of Sciences (NAS), which when integrated would create four main categories of 21st century skills namely: cognitive, interpersonal, self-task management and personal characteristics. In terms of reliability of the instrument, it registered a Cronbach's alpha of 0.97 when pilot tested using 100 participants as sample population.

Main Themes/Categories	Specific Categories	Number of items
Cognitive skills	Creative thinking, critical thinking and problem solving	6
Interpersonal skills	Communication skills, collaborative skills, cross-cultural skills, leadership skills and social skills	10
Self-task management skills	Self-monitoring, self-directing and project management skills	6
Personal characteristics	Ethics, civic responsibility and accountability for high standards	6
21 st Century Skills	Cognitive skills, Interpersonal skills, Self-	28

task management skills and
Personal characteristics

In interpreting the mean scores resulting in the evaluation, and in establishing a wider variability of responses as well as respecting the middle option, a scale of seven was adapted, indicating 1 as "Extremely not evident", 4 -neutral and 7 as "Extremely evident".

Scale	Verbal Interpretation
1.00	1.85 Extremely not evident
1.86	2.72 Not evident
2.73	3.59 Slightly not evident
3.60	4.46 Neutral
4.47	5.33 Slightly evident
5.34	6.20 Evident
6.21	7.00 Extremely evident

To generate a precise interpretation for "evident", an arbitrary scale with verbal interpretation as "moderately evident" and "highly evident" was used.

Scale	Verbal Interpretation
5.34	5.76 Moderately evident
5.77	6.20 Highly evident

Using SPSS version 17, tests were run using frequency distribution, mean and standard deviation. To test relationships among variables, Pearson's r was utilized and to test the significant difference between groups, an independent sample t-test was computed. There are two groups for gender: male and female and two groups for batches: 2015-2019 and 2010-2015.

Based on the Center for Instruction, Research and Curriculum (CIRC), the following scale in interpreting relationships was adopted.

r-coefficient scale	Interpretation
0.70 or higher	Very strong
0.40- 0.69	Strong
0.30 – 0.39	Moderate
0.20 - 0.29	Weak
0.19 and below	Negligible

RESULTS

General image of UA graduate's competencies and skills based on the perception of employers

Demographic Profile

There are 63.8% female and 36.2% male graduates who were evaluated by the employers in the industry. A majority of the graduates belongs to the rank and file (68.2%), only a few are middle managers (31.4%). Only one graduate occupies top management position. A greater bulk of the graduates are BS in Nursing followed by BS in Business Administration. There are 61% of the graduates who belong to batch 2010-2015 and 39% belong to batch 2005-2009.

Table 1
Frequency Distribution of Graduates Evaluated by Employers

Themes	Categories	F	%
Sex	Female	146	63.8
	Male	83	36.2
Job classification	rank and file	156	68.1
	middle management	72	31.4
	top management	1	0.4
Academic Programs	BS in Nursing	95	41.5

BS in Hotel and Restaurant Management	14	6.1
AB in Communication	12	5.2
BS in Computer Engineering	3	1.3
BS Accountancy	14	6.1
BS in Business Administration	40	17.5
BS in Accounting Technology	8	3.5
Bachelor in Secondary Education and Elementary Education	20	8.7
BS in Computer Science	7	3.1
BS in Psychology	8	3.5
BS in Industrial Engineering	3	1.3
BS in Civil Engineering	1	.4
BS in Tourism Management	1	.4
BS in Information Technology	3	1.3
<hr/>		
Year Graduated		
2005-2009	89	39.0
2010-2015	139	61.0

Based on the results of the study, industry employers described UA graduates to be “evidently” possessing 21st century skills. Generally, UA graduates possess cognitive, interpersonal, self-task management skills and personal characteristics. There are eight out of fourteen listed 21st century skills and eleven out of 28 behavioral indicators that registered “highly evident”. No behavioral indicators registered as “extremely evident”.

In terms of cognitive skills, the graduates are characterized as “evidently” possessing creative thinking (M=5.6), problem solving (M=5.6) and critical thinking skills (M=5.6). But such characteristics are interpreted as “moderately evident”.

In terms of interpersonal skills, the graduates are also characterized as “evidently” possessing collaborative (M=5.9), cross-cultural (M=5.9) and social skills (M=5.9). On a positive note, such characteristics are considered “highly evident”, except for communication

skills (5.5) and leadership skills (M=5.6) that are interpreted as “moderately evident”.

In terms of self-task management skills, the graduates are characterized as “evidently” possessing self-direction skills and project-management skills. Notably, such characteristics are also considered “highly evident”. The graduates’ self-monitoring skills (M=5.7) are generally “evident”, but specifically such characteristics are interpreted as “moderately evident”.

In terms of personal characteristics, the graduates are described as “evidently” observing ethics (M=5.9) and accountability for high standards (M=5.8). Favorably, such characteristics are described as “highly evident”. The weakest among the personal characteristics is civic responsibility (M=5.7) which is described as “moderately evident”.

Notably, the graduates possess collaborative skills because they respond positively through cooperation and teamwork (M=5.92). They possess also cross-cultural skills since they respect the opinions and perceptions of others even if these are contrary to theirs (M=5.90). They talk discreetly and politely with stakeholders and clientele (M=5.96). These behavioral indicators are described as “highly evident”.

In terms of social skills, it is “highly evident” that UA graduates demonstrate good personal relation to all members of the organization (M=5.83). The graduates also display self-direction skills where they demonstrate strong self-motivation in fulfilling day-to-day duties and activities (M=5.78) and demonstrate strong willingness to extend hours of work even without pay (M=5.80). The graduates also display self-management skills for they perform effectively assigned tasks or projects in the organization (M=5.79).

Ethically speaking, it is also “highly evident” that UA graduates display positive attitude or good character (M=5.96) and win the respect of their peers because of their uncompromised integrity. Similarly, they have accountability for high standards because they observe accountability in following policies and standards set by the administration and management (M=5.82) and show great responsibility through concrete actions in achieving excellence in work (M=5.87).

Table 2
Evaluation Results of Graduates by Employers

Themes and Sub-Themes	Indicators	N	Min	Max	Sub-Mean	Mean	SD	General Interpretation	Specific Interpretation
Cognitive Skills									
Creative Thinking	1. Finds own information from reliable sources vital to the accomplishment of the job	229	3.00	7.00	5.6376		.91985	Evident	Moderate
	2. Advocates, implements and/or creates relevant technology in the discipline	229	2.00	7.00	5.5022	5.56	.96256	Evident	Moderate
Problem Solving	3. Develops innovative strategies and tactical solutions in solving problems in the organization	229	3.00	7.00	5.5983		.96663	Evident	Moderate
	4. Demonstrates logical deductive or inductive reasoning in understanding a problem	229	3.00	7.00	5.6070	5.60	.92392	Evident	Moderate
Critical Thinking	5. Challenges information that is put before him/her	229	3.00	7.00	5.5546		.89973	Evident	Moderate
	6. Finds strategic solutions from different angles through effective analysis and interpretation of valid information	229	3.00	7.00	5.5895	5.57	.91626	Evident	Moderate

Interpersonal Skills

	7. Expresses clearly insights, ideas and information in meetings	229	2.00	7.00	5.6288	.95387	Evident	Moderate
Communication skills	8. Makes grammatically sound written memos/ letters either manually or electronically	229	3.00	7.00	5.4803	1.0537 4	Evident	Moderate
						5.55		
Collaborative skills	9. Takes responsibility and accountability as a team player	229	3.00	7.00	5.7293	.89151	Evident	Moderate
	10. Responds positively through cooperation and teamwork	229	3.00	7.00	5.9170	.87716	Evident	High
						5.80		
Cross-cultural Skills	11. Respects the opinions and perceptions of others even if these are contrary to his/hers	229	3.00	7.00	5.9039	.85810	Evident	High
	12. Talks discreetly and politely with stakeholders and clientele	229	3.00	7.00	5.9563	.86238	Evident	High
						5.93		
Leadership Skills	13. Shows strong influence to peers on important issues and concerns of the organization	229	3.00	7.00	5.6943	.82346	Evident	Moderate
	14. Inspires colleagues to do organizational tasks excellently	229	3.00	7.00	5.5939	.85643	Evident	Moderate
						5.64		

Social Skills	15. Demonstrates good personal relation to all members of the organization	229	3.00	7.00	5.8341	.88777	Evident	High
					5.77			
	16. Shows strong personal charism in dealing with difficult people	229	3.00	7.00	5.6987	.81706	Evident	Moderate
Self- task Management skills								
Self monitoring Skills	17. Initiates self-assessment, evaluation and capacity building for self-improvement	229	2.00	7.00	5.6943	.89981	Evident	Moderate
					5.71			
	18. Observes efficient record keeping and documentation of completed tasks	229	2.00	7.00	5.7205	.90833	Evident	Moderate
Self-direction Skills	19. Demonstrates strong self-motivation in fulfilling day-to-day duties/activities	229	3.00	7.00	5.7817	.84574	Evident	High
					5.79			
	20. Demonstrates strong willingness to extend hours of work even without pay	229	2.00	7.00	5.8035	.99595	Evident	High
Project Management skills	21. Performs effectively assigned tasks or projects in the organization	229	2.00	7.00	5.7991	.91469	Evident	High
					5.76			
	22. Manifests management competencies in his/her area of specialization	229	2.00	7.00	5.7162	.91419	Evident	Moderate

Personal Characteristics

Ethics	23. Displays positive attitude or good character	229	2.00	7.00	5.9651	.89276	Evident	High
	24. Wins the respect of his/her peers because of his uncompromised integrity	229	3.00	7.00	5.8952	.81511	Evident	High
Civic Responsibility	25. Demonstrates civic concern for the employees and the community	229	3.00	7.00	5.6987	.89396	Evident	Moderate
	26. Exhibits great concern and care for the sustainability of the whole company	229	3.00	7.00	5.7642	.85652	Evident	Moderate
Accountability for high standards	27. Observes accountability in following policies and standards set by the administration/management	229	3.00	7.00	5.8166	.81191	Evident	High
	28. Shows great responsibility through concrete actions in achieving excellence in work	228	3.00	7.00	5.8684	.77985	Evident	High

Graduates' general competency rating according to type of industry;

UA graduates perform well in manufacturing, marketing, hotel, education, government and hospital industries. The weakest link among the industries where graduates work are the BPO, car and telecommunication industries.

Table 3
General Average Competency Rating of Graduates According to Type of Industry

Type of Industry	n	Mean	SD	Verbal Interpretation
Hospital	87	5.78	0.609	Highly Evident
Hotel	7	5.82	0.566	Highly Evident
Event	3	5.63	0.125	Moderately Evident
Car	35	5.39	0.911	Moderately Evident
Accounting	2	5.41	0.076	Moderately Evident
Government	44	5.79	0.434	Highly Evident
Telecommunication	5	5.40	0.325	Moderately Evident
Education	19	5.80	0.743	Highly Evident
Marketing	17	5.99	0.732	Highly Evident
Manufacturing	6	6.18	0.594	Highly Evident
BPO	2	4.82	0.354	Slightly Evident

Based on the results of the assessment, the overall ratings of the 21st Century skills of graduates are described to be having “strong and very strong” significant relationships at the 0.01 level. Specifically, their creative thinking skills registered a “Very Strong” significant relationship with problem solving ($r=.776$), critical thinking skill ($r=.705$), self-monitoring ($r=.703$) and accountability for excellence ($r=.703$) and vice versa; and likewise registered a “Strong” significant relationship with other skills ($.40 \leq r \leq .69$).

Furthermore, the graduates’ problem solving skills incurred a “Very Strong” relationship with critical thinking skills ($r=.747$). Notably, the graduates’ collaborative skills is described as having “Very Strong” significant relationship with project management skills ($r=.706$). Similarly, there is “Very Strong” significant relationship between leadership and civic responsibility ($r=.722$); self-direction and project management ($r=.728$); project management and ethics ($r=.720$); and, civic responsibility and accountability for excellence ($r=.76$).

Relationship among graduates' assessed 21st century skills by employers

**Table 4
Correlation among Graduates 21st Century Skills as Evaluated by Employers**

	Creative	Problem Solving	Critical	Communication	Collaboration	Cross-Cultural	Leadership	Social	Self-monitoring	Self-direction	Project management	Ethics	Civic Responsibility	Accountability for Excellence
Creative														
Pearson Correlation	1	.776**	.705**	.663**	.699**	.596**	.681**	.544**	.703**	.617**	.696**	.565**	.637**	.703**
Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
N	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Problem solving														
Pearson Correlation	.776**	1	.747**	.665**	.659**	.551**	.658**	.566**	.705**	.647**	.683**	.554**	.631**	.681**
Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
N	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Critical														
Pearson Correlation	.705**	.747**	1	.659**	.596**	.481**	.599**	.477**	.638**	.534**	.614**	.509**	.579**	.637**
Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
N	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Communication														
Pearson Correlation	.663**	.665**	.659**	1	.578**	.496**	.624**	.478**	.624**	.455**	.565**	.484**	.597**	.601**
Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
N	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Collaboration														
Pearson Correlation	.699**	.659**	.596**	.578**	1	.680**	.616**	.656**	.649**	.666**	.706**	.680**	.619**	.686**
Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
N	229	229	229	229	229	229	229	229	229	229	229	229	229	229

Ethics	Pearson Correlation	.596*	.551**	.481**	.496**	.680**	1	.608**	.670**	.682**	.569**	.566**	.683**	.566**	.589**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Project Management	Pearson Correlation	.681*	.658**	.599**	.624**	.616**	.608**	1	.676**	.693**	.564**	.641**	.561**	.722**	.691**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Self-Direction	Pearson Correlation	.544*	.566**	.477**	.478**	.656**	.670**	.676**	1	.611**	.570**	.585**	.683**	.651**	.606**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Self-monitoring	Pearson Correlation	.703*	.705**	.638**	.624**	.649**	.682**	.693**	.611**	1	.691**	.675**	.628**	.654**	.677**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Social	Pearson Correlation	.617*	.647**	.534**	.455**	.666**	.569**	.564**	.570**	.691**	1	.728**	.632**	.594**	.648**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Leadership	Pearson Correlation	.696*	.683**	.614**	.565**	.706**	.566**	.641**	.585**	.675**	.728**	1	.720**	.668**	.679**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229
Cross-cultural	Pearson Correlation	.565*	.554**	.509**	.484**	.680**	.683**	.561**	.683**	.628**	.632**	.720**	1	.685**	.675**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229	229

Civic Responsibility	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229
	Pearson Correlation	.637*	.631**	.579**	.597**	.619**	.566**	.722**	.651**	.654**	.594**	.668**	.685**	1	.760**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
Accountability for high standards	N	229	229	229	229	229	229	229	229	229	229	229	229	229	229
	Pearson Correlation	.703*	.681**	.637**	.601**	.686**	.589**	.691**	.606**	.677**	.648**	.679**	.675**	.760**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	229	229	229	229	229	229	229	229	229	229	229	229	229	

** . Correlation is significant at the 0.01 level (2-tailed).

Relationship between the graduates’ job performance and their assessed 21st century skills

Table 4 shows “Strong” significant relationships between graduates’ job performance ratings and their 21st century skills as evaluated by employers. The highest correlation is between job performance and accountability for high standards (r=.678), followed by job performance and collaboration (r=.639), and job performance and project management (r=.615). The weakest link in terms of correlation is between job performance and communication skills (r=.486).

Table 5
Relationship between Job Performance and 21st Century Skills

	Creative	Problem Solving	Critical	Communication	Collaboration	Cross-Cultural	Leadership	Social	Self-monitoring	Self-direction	Project management	Ethics	Civic Responsibility	Accountability for Excellence
Pearson Correlation	.580 ^{**}	.556 ^{**}	.538 ^{**}	.486 ^{**}	.639 ^{**}	.525 ^{**}	.566 ^{**}	.524 ^{**}	.580 ^{**}	.591 ^{**}	.615 ^{**}	.535 ^{**}	.568 ^{**}	.678 ^{**}
Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
N	229	229	229	229	229	229	229	229	229	229	229	229	229	229

** . Correlation is significant at the 0.01 level (2-tailed).

Difference between male and female and batch 2005-2010 and batch 2011-2015 in terms of their assessed 21st century skills

Table 5.1
Difference between Male and Female Graduates' 21st Century Skills Index

21st Century skills	Sex	N	Mean	Std. Deviation	t	df	p-value	Interpretation
Cognitive skills	female	146	33.6849	4.89441	.889	227	.375	Not significant
	male	83	33.0964	4.67117				
Interpersonal skills	female	146	57.6849	6.39693	.747	227	.456	Not significant
	male	83	57.0000	7.12433				
Self-task management skills	female	146	92.3562	10.57762	.760	227	.448	Not significant
	male	83	91.2410	10.84434				
Personal characteristics	female	146	35.0548	4.27629	.463	227	.644	Not significant
	male	83	34.7831	4.26285				

Table 5.2
Difference between Male and Female graduates' 21st Century Skills Index according to Categories

21st Century Skills	Sex	N	Mean	SD	t	df	p-value	Interpretation	
Cognitive Skills	Creative skills	female	146	11.1918	1.80541	.593	227	.554	not significant
		male	83	11.0482	1.68134				
	Problem solving	female	146	11.2877	1.84562	.927	227	.355	not significant
		male	83	11.0602	1.67003				
	Critical thinking skills	female	146	11.2055	1.67710	.907	227	.365	not significant
		male	83	10.9880	1.85771				
Interpersonal skills	Communication skills	female	146	11.1849	1.69382	.842	227	.401	not significant
		male	83	10.9759	1.98762				
	Collaboration skills	female	146	11.6301	1.76171	-.196	227	.845	not significant
		male	83	11.6747	1.44921				
	Cross-cultural skills	female	146	11.8973	1.49818	.487	227	.626	not significant
		male	83	11.7952	1.56765				
Self-task management skills	Leadership skills	female	146	11.3288	1.48142	.534	227	.594	not significant
		male	83	11.2169	1.60067				
	Social skills	female	146	11.6438	1.46565	1.438	227	.152	not significant
		male	83	11.3373	1.69128				
	Self-monitoring skills	female	146	11.4726	1.55450	.701	227	.484	not significant
		male	83	11.3133	1.81409				
	Self-direction skills	female	146	11.5890	1.78759	.047	227	.963	not significant
		male	83	11.5783	1.44087				
	Project management skills	female	146	11.6096	1.75528	1.112	227	.267	not significant
		male	83	11.3494	1.60361				
Personal characteristics	Ethics	female	146	11.9589	1.57514	1.270	227	.205	not significant
		male	83	11.6867	1.52961				
	Civic responsibility	female	146	11.4726	1.62818	.174	227	.862	not significant
		male	83	11.4337	1.60937				
	Accountability for high standards	female	146	11.6233	1.61945	-.182	227	.856	not significant
		male	83	11.6627	1.50022				

Table 6.1
Difference between Batches 2005-2009 and 2010-2015
graduates' 21st Century Skills Index

21st Century Skills	Batches	N	Mean	Std. Deviation	t	df	p-value	Interpretation
Cognitive skills	2005-	8	33.6	5.0578	.508	2	.612	Not significant
	2009	9	854	4				
	2010-	1	33.3	4.6762				
	2015	3	525	8				
Interpersonal skills	2005-	8	57.7	6.6640	.515	2	.607	Not significant
	2009	9	191	0				
	2010-	1	57.2	6.7029				
	2015	3	518	0				
Self-task management skills	2005-	8	92.2	10.941	.358	2	.720	Not significant
	2009	9	472	25				
	2010-	1	91.7	10.549				
	2015	3	266	27				
Personal characteristics	2005-	8	35.4	4.3633	1.350	2	.178	Not significant
	2009	9	045	8				
	2010-	1	34.6	4.1707				
	2015	3	259	6				

Tables 5.1, 5.2 and 6.1 show no significant difference in terms of the graduates' 21st century skills index between male and female and between batch 2005-2009 and batch 2010-2015, with p-values > .05. Males and females have almost the same assessment in terms of skills. Similarly, batches 2005-2009 and batch 2010-2015 have almost similar skills ratings. However, there is one item which is "Accountability for high standards" that registered a significant difference between the two batches based on the *p-value* of .023 which is less than the *alpha* 0.05. This indicates that the graduates of batch 2010-2015 (M=11.44, SD1.54) was significantly lower in terms of mean score on "Accountability for Excellence" compared to batch 2005-2009 (M=11.92, SD=1.58).

Table 6.2
Difference between Batches 2005-2009 and 2010-2015
graduates' 21st Century Skills Index according to Categories

21st Century skills		Batches	N	Mean	Std. Deviation	t	df	p-value	Interpretation
Cognitive Skills	Creative skills	2005-2009	89	11.2247	1.92326	.548	226	.584	not significant
		2010-2015	139	11.0935	1.65456				
	Problem solving	2005-2009	89	11.2584	1.81864	.353	226	.725	not significant
		2010-2015	139	11.1727	1.77310				
	Critical thinking skills	2005-2009	89	11.2022	1.77853	.488	226	.626	not significant
		2010-2015	139	11.0863	1.72988				
Interpersonal skills	Communication skills	2005-2009	89	11.1573	1.82096	.289	226	.773	not significant
		2010-2015	139	11.0863	1.80371				
	Collaboration skills	2005-2009	89	11.6292	1.74761	-.049	226	.961	not significant
		2010-2015	139	11.6403	1.58803				
	Cross-cultural skills	2005-2009	89	11.9213	1.54644	.488	226	.626	not significant
		2010-2015	139	11.8201	1.51443				
Self task management skills	Leadership skills	2005-2009	89	11.4831	1.49326	1.538	226	.126	not significant
		2010-2015	139	11.1655	1.53980				
	Social skills	2005-2009	89	11.5281	1.45454	-.054	226	.957	not significant
		2010-2015	139	11.5396	1.62528				
	Self-monitoring skills	2005-2009	89	11.5169	1.67272	.763	226	.446	not significant
		2010-2015	139	11.3453	1.64498				

	Self-direction skills	2005-2009	89	11.4607	1.79682	.827	226	.409	not significant
		2010-2015	139	11.6475	1.57362				
	Project management skills	2005-2009	89	11.5506	1.71233	.296	226	.768	not significant
		2010-2015	139	11.4820	1.70401				
Personal characteristics	Ethics	2005-2009	89	11.8989	1.55976	.372	226	.711	not significant
		2010-2015	139	11.8201	1.56155				
	Civic responsibility	2005-2009	89	11.5843	1.60120	.989	226	.324	not significant
		2010-2015	139	11.3669	1.62919				
	Accountability for high standards	2005-2009	89	11.9213	1.57556	2.285	226	.023	significant
		2010-2015	139	11.4388	1.54223				

DISCUSSION

When graduates' behavioral indicators are reflective of 21st century skills in the workplace, one feels blessed of the quality of education the academic institution offers. Notably, there is evidence to support that UA graduates possessed the necessary skills and competencies needed in the 21st century workplace. Concomitantly, through the lens of employers in industry positive perception on the graduates' skills are notable.

Cognitive skills like creative thinking, problem solving and critical thinking are basic requisite skills of an effective manager (Fisher, 2010). With the advanced technology today, graduates must be able to find their own information from reliable and scholarly sources vital to the accomplishment of a job. Training in the use of computer and other technology is vital and necessary. Through ICT programs, graduates must be able to harness their computer and digital skills to become more competitive in the market; that is to be suited for the job and most likely getting a higher paying job (Autor, Levy & Murnane, 2003). It is crucial

that they must be able to apply content knowledge in creative ways (Gregory, Hardiman, Yarmoliskaya, Rinne & Limb 2013), especially now where technology has replaced workers performing routine tasks, and has continue to complement individuals with high level skills and empower them to be productive and creative (Autor, Levy & Murnane, 2003). In whatever discipline, millennial graduates must be able to advocate, implement and create relevant technology that will help them in facilitating the job well. Understanding the millennials and modern technology must be highly considered to be able to address challenges and problems (Gibson & Sodeman 2014). Today's millennial graduates must be able to develop innovative strategies and tactical solutions in solving problems of the organization and must demonstrate logical deductive and inductive approaches based on reason and context to address and solve complex problems. Moreover, they must challenge every information they get and find strategic solutions from different angles through effective analysis and interpretation of valid and unbiased information.

Notably, all these behavioral indicators are perceived to be "moderately evident" in the graduates of the University as evaluated by employers in the workplace. Such cognitive skills are required for specific jobs and therefore they must be harnessed fully in order to be more attuned with the demands of the industry. Since educational attainment is no longer a guarantee of either academic or skills proficiency (van Ark, Barrington, Fosler, Hulten & Woock, 2009), therefore the platforms that support innovation, creativity, problem solving and critical thinking are in great demand; and therefore must be honed and owned (Caner-Lotto & Barrington, 2006; Conference Board, 2007; Lichtenberg, Woock & Wright, 2008).

It is noteworthy that 21st Century skills are needed in many facets of life besides the workplace (Murnane & Levy, 2014). They matter a lot especially in facing the challenges of modern living especially now where significant changes happen in the world which Gladwell (2000) called the "tipping point". The millennial graduates must have holistic development that is not restrictive to cognitive development but also to the non-cognitive part such as interpersonal skills, self-task management skills and personal characteristics.

In terms of interpersonal skills, there are many challenges and practical barriers to collaboration such as preparation for corroborative roles and availability of time for collaboration (Friend & Barron 2015). Given the enabling factors and programs for collaboration in the academe, the youth may imbibed the non-cognitive skills necessary for positive interaction and strong collaboration. Studies show that non-cognitive skills are stronger predictors of higher income, better employment status and positive industry outcomes as well as success in college life (Lindqvist & Westman, 2011; Brunello & Schlotter, 2011; Sparkman, Maulding & Roberts, 2012).

Notably, UA graduates are well-known for their collaborative skills. Based on the results, they respond positively through cooperation and teamwork and take responsibility and accountability as team players. Moreover, UA graduates possess cross-cultural skills since they respect the opinions and perceptions of others and talk discreetly and politely with stakeholders and clientele. This is a special feature that community is proud of. In terms of social skills, they demonstrate good personal relation to all members of the organization and show strong personal charism in dealing with difficult people.

Based on the results, UA graduates fall a little short in their communication skills. It is described as "moderately evident", most especially in expressing their insights, ideas and information in meetings and in making grammatically sound communications either electronically or manually. It is also "moderately evident" that UA graduates manifests leadership skills, that is showing influence to peers on important issues and concerns of the organization and inspiring colleagues to do organizational tasks excellently. These are the areas under interpersonal skills that need to be addressed in the curricula and in the development of pro-active school programs.

In terms of self-task management skills, results show that it is "highly evident" that graduates possess self-direction skills for they demonstrate strong self-motivation in fulfilling day-to-day duties. They demonstrate strong willingness to extend hours of work even without pay. Remarkably, they perform effectively in their assigned tasks or projects in the organization. This is typically the good attributes students learn in the

academe; that is imbibing the value of patience and diligence which can be an important asset for promotion and success. On a lower note, it is "moderately evident" that they manifest management competencies in the area of specialization. Their self-monitoring skills remain to be developed fully for there is enough room for improvement in personally initiating self-assessment, evaluation and capacity building for self-improvement, as well as in observing efficient record keeping and documentation of completed tasks.

In terms of personal characteristics, it is "highly evident" that UA graduates are ethically formed for employers observe them to be having positive attitude or good character and they regularly win the respect of their peers because of their uncompromised integrity; which is typically the Assumptionist attribute worth of emulation. They also manifest accountability for high standards. In fact they observe accountability in following policies and standards set by the organization and show great responsibility through concrete actions in achieving excellence at work.

Relatively, they lagged in terms of civic responsibility for it is only "moderately evident" that they demonstrate civic concern for the employees and the community and exhibits concern and care for the sustainability of the whole community. This confirms the UA Tracer study 2009-2013, wherein graduates' perception of their own socio-civic involvement is relatively low.

Results show notable indicators how graduates of BS in Industrial Engineering, BS in Business Administration, BS Hotel and Restaurant Management, Bachelor in Secondary/ Elementary Education and BS in Nursing perform well in their respective fields. On the other hand, the weakest link among the industries where graduates work involves having good communication skills.

Relationships between the 21st Century skills are very much manifested in the evaluation of graduates by employers. Generally, the 21st century skills incurred "strong" and "very strong" significant positive cross-relationships. In fact, the three cognitive skills namely: creative thinking, problem solving and critical thinking registered "very strong" positive correlation. That is when there is an increased performance of graduates in creative thinking, there will also be an increased performance

in problem solving and critical thinking. Likewise if there is a decreased performance in problem solving, there will also be a decreased performance in critical thinking and creative thinking. These three cognitive skills have very strong correlation since they appeal to the intellect and therefore must to be taught seriously in the academe (Snyder & Snyder 2008). Creative thinking has also a "very strong" relationship to self-monitoring and accountability for excellence. Similarly, problem solving has a "very strong" correlation with self-monitoring and "strong" correlation with other variables. The intricacy of solving problems necessitates the presence of mind of an individual. Without monitoring oneself through personal discernment, one would not be able to find solutions to a problem.

Results show that there is very strong correlation that exists between collaboration and self-management for it is easy to collaborate when people manage first themselves well. Every group of active collaborators presupposed pro-active self-managers. Likewise, there is also a very strong correlation between leadership and civic responsibility for to be a leader in the society one must be able to show social concern by way of extending help through civic services to the community. Moreover, there is a very strong relationship between self-direction and project-management for self-autonomy is a basic requisite in effectively managing and handling of a project. Without it, a project is doomed to fail. People cannot manage a project without intrinsic direction emanating from the self. Furthermore, there is a very strong relationship between civic responsibility and accountability for high standards for people with high accountability for high standards always consider the greatest good of society and their advocacy does not end in systems and standards but dwell concretely in helping other people to improve their lives. The UA graduates' skills exemplify the interconnectedness of these skills in the workplace.

In terms of relationship with job performance, the 21st Century skills must be honed by all students across disciplines since they relate significantly with job performance in varying degrees of relationship. Based on the results of the study, three overarching skills emerged to be greater predictors of job performance namely, accountability for high standards, collaboration and project management. These skills have to be emphasized in the curriculum across programs not just in the tertiary but also in the basic education.

There are many studies on the personality difference, skills difference, management difference between male and female (Mueller &

Plug 2006; Jacob 2002; Burke & Collins 2001). Contrary to this claim, the results of the current study described the graduates' 21st century skills to be independent of the gender (sex). There was no gap in terms of gender among the graduates since there is no significant difference between male and female as rated by industry employers. This may be an indicative of the culture of gender equality emanating in the system of education in the academic institution (Teelken & Deem 2013; Monroe & Chiu 2010) which influences the comparability between genders. Furthermore, the graduates regardless of the batch have almost similar degree of competencies and skills except for their accountability for high standards. In current study, later graduates display lower mean scores as compared to earlier graduates when it comes to accountability for high standards. This area of concern must be addressed since standards are normally upgraded as time progresses.

In contemporary context, 21st century skills are essential for leading a meaningful life in a multicultural and digital society. Concomitantly, a new social contract has emerged wherein only people who have the knowledge and skills to negotiate constant change and reinvent themselves to new situations will succeed in their profession (Casner & Barrington, 2006). Today, there are numerous complex challenges and problems every Filipino individual addresses that include matters as death penalty, cybercrimes, drugs, global warming, terrorism, immigration, and proliferation of nuclear weapons. Articulating these problems and engaging in finding solutions requires a well-educated citizenry adept at expert thinking and complex communication (Autor, Levy & Murnane, 2003).

The infusion of 21st century skills in the core curricula across programs from basic education to higher education is also crucial in preparing the young for the unique demands of 21st century workplace. Learning academic content through real world problems and the acquisition of numeracy, literacy, scientific and technological knowledge as applied to real life is emphasized by DepEd (DepEd Primer, 2011).

On one hand, the Commission on Higher Education (CHED) has always prioritized the importance of the holistic development of a person in addressing education gaps. In fact the New General Education Curriculum (CMO 20, 2013) which will be fully implemented effective AY 2018-2019 has outlined the general outcomes. According to CHED, students of higher learning must be conscious of their identity as individuals, as Filipinos and as members of the global community. They

must have understanding and appreciation of the ways of knowing the self, society, world and environment, appreciation of human condition, capacity to interpret human experience, be able to view the contemporary world, self-assured in knowing and being Filipino and being capable of reflecting critically on shared concerns. Moreover, they have to think not just innovatively, but come up with creative solutions but always guided by ethical standards. They must possess the aptitude to tackle problems methodically and scientifically. They must have the ability to appreciate and contribute artistic beauty and to the country's development. All these skills and competencies must begin in children most especially kindergarten until they become adult learners in higher education.

Indeed, 21st century skills are expected of students as they venture successfully into higher education, workplaces and independent life. It's only when people understand the outcomes that they see the importance of building infrastructures that will lift education system to commanding heights (Partnership for 21st Century Skills, 2009). But such understanding boils down to the realization that learning 21st century skills requires 21st century teaching pedagogy (Saavedra & Opfer, 2012). Both basic education and higher learning institutions must be prepared for this endeavor most especially the people in charge with instruction.

Without clear articulation of the outcomes that the youth need for a successful future, building and reshaping of the infrastructures would seem to be premature (Partnership for 21st Century Skills, 2009). Therefore, a specific framework of education outcomes must be articulated and developed through a continuing dialogue between the academe, the industry and policy makers.

To Catholic education institutions, the end of education is not simply to find a lucrative job or employment but the search for truth and authentic living (Tabora, 2017). There is no doubt that the skills needed by the graduates are already manifested; and notably, UA graduates excel more in their non-cognitive than cognitive skills. Such claim is attributed to the faculty or teachers of the institution who are responsible in holistically molding the youth. On a positive note, the cross-cultural skills, self-direction skills, ethics and accountability for high standards that the graduates possessed may be strong predictors not just of better employment but a strong propeller for a well-balanced and authentic living.

Recommendations

In the macro context, a continuing dialogue on student outcomes relative to the 21st century skills between the educators in academe, policy makers and representatives of the business community must be considered to effectively address achievement gaps and create systems that can effectively deliver the best results. Likewise, they have to synergize efforts toward shaping existing education frameworks into a comprehensive and purposeful vision for 21st century education. Establishing strong partnerships with the industries pertinent to student practicum programs and visiting industry practitioner programs may be highly considered. Regular round-table discussions on the challenges brought by the ASEAN integration must be mandated by the academe, policy makers and industry.

With the employers' perception that UA graduates possessed 21st century skills, the University may still consider prioritizing learning outcomes that would further improve students' cognitive skills such as creative thinking, problem solving and critical thinking. The harnessing of two interpersonal skills namely, communication skills and leadership skills must be prioritized in the design of the curriculum and other programs. Under self-task management skills and personal characteristics, the development of self-monitoring skills and civic responsibility must be addressed by the institution through appropriate curricular, extracurricular and/or non-curricular programs.

From a micro standpoint, as formator of Catholic leaders, the University of the Assumption must consider not just the development of cognitive skills, leadership skills and civic responsibility in all students but also in all teachers across levels. Perceived gaps in the skills of graduates is reflective of the same gaps in teachers. Thus, faculty retooling and continuing staff development on teaching pedagogy, outcomes-based teaching and learning and socio-economic-cultural issues must be carried out and sustained. Campus dynamism through students' initiatives and efforts must be encouraged, evoked and harnessed to entail the culture of life-long learning in students. It is in these platforms, that teachers and the students may become authentically characterized as BIASA (academically competent), MAYAP (socially responsible) at MAGANACA (morally upright). When that happens, all graduates of the institution will not just be referred as employable and preferred graduates but employable leaders.

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