

Editorial: The use of a tracer study to advance the undergraduate program at the Royal University of Phnom Penh

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It has been recognized that academic performance does not always help students to seek decent work. Tracer studies have become popular at Higher Education Institutions (HEIs) for tracking and evaluating student progress beyond graduation and are recommended to be conducted regularly on individuals, groups, or departments over time. For instance, a study may track a cohort of students with scholarships, as an experimental group, and another without a scholarship, as a control group (INTRAC, 2017).

Tracer studies use alumni surveys to evaluate the performance of HEIs by monitoring graduate outcomes (Millington, 2010) and are essential for reflection on how curricula may better meet the demands of the labour market (Harvey, 2000). They are used to identify skills mismatches and salary expectations, as well as monitor job satisfaction (Badillo-Amador & Vila, 2013), which have policy and equity implications (Rogan and Reynolds, 2016). Tracer studies collect data about the relationship between HEIs and

employment outcomes to explore deficiencies in teaching and learning processes, which is useful for policy and planning decisions within the higher education sector (Schomburg, 2003).

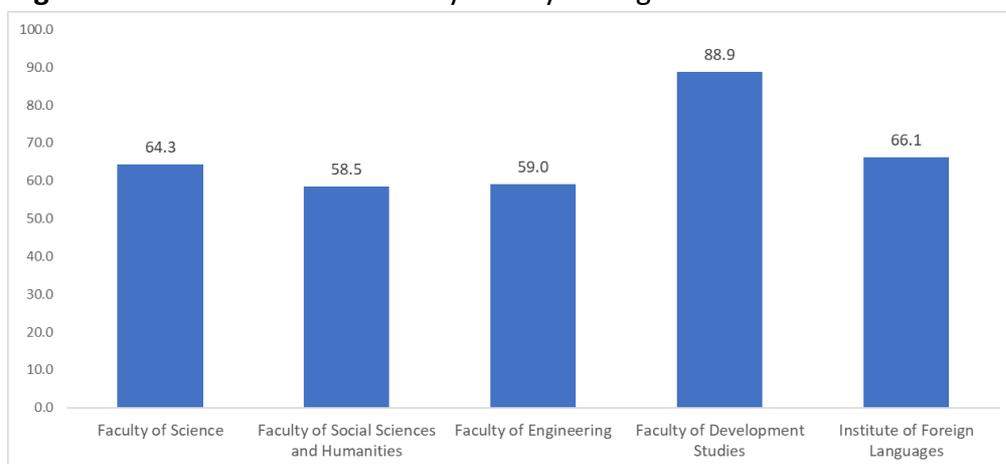
Tracer studies retrospectively analyze graduate outcomes using a standardized survey conducted six months to three years after completion of a program, which is systematically repeated either annually or biannually (ETF-Cedefop-ILO, 2016). The results from these studies are essential for educators and program evaluators to gather evidence to review and further develop curricula in line with workplace demands (Osei, 2010). For instance, the Department of Library and Information Studies at the University of Botswana conducted a tracer study to collect and analyze data from alumni about the training of librarians and their perception of the teaching content, quality of education, and career pathways (Latif and Bahroom, 2010). This kind of information enables HEIs to transform academic knowledge to better meet market requirements (Schomburg, 2003).

Since 2004, the Royal University of Phnom Penh (RUPP) has conducted biannual tracer studies. Based on this experience, the Department of Higher Education within the MoEYS instructed all HEIs in Cambodia to conduct annual studies. Since this time, the RUPP has contacted 1,562 alumni in 2020 and 1,076 alumni in 2021 to obtain a richer understanding of the employability of alumni and their satisfaction with the curriculum. This editorial paper outlines some of the findings of the tracer study conducted in 2021.

Knowledge and skills obtained at the RUPP

Tracer studies at the RUPP ask alumni about the knowledge and skills that have been used after graduation. It found that 58.5% of the alumni from the Faculty of Social Science and Humanities used the skills they had learned, compared with 88.9% of those from the Faculty of Development Studies. A chi-square test revealed no significant relationship between these percentages across the five faculties ($P\text{-value}=0.211$), suggesting that these results were similar (Figure 1).

Figure 1. Skill used after alumni by faculty after graduation

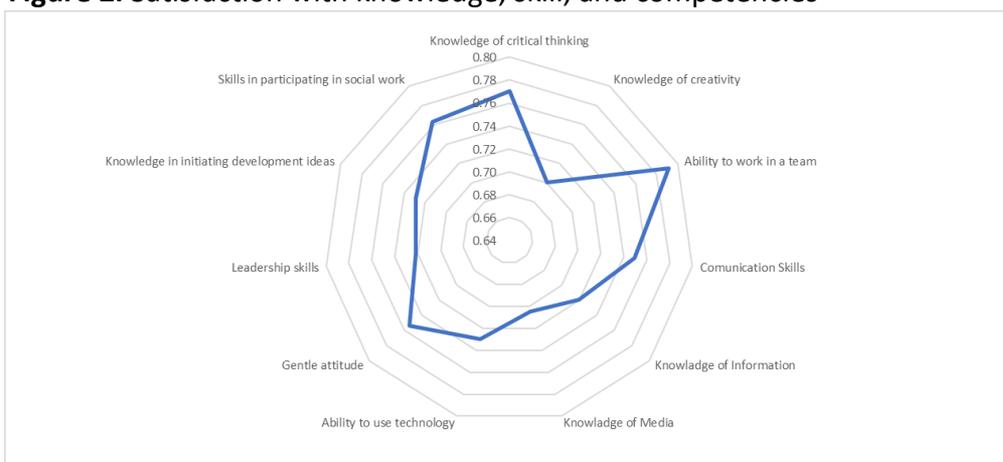


Note: Chi-square test ($P\text{-value}=0.211$).

Overall, alumni indicated a high degree of satisfaction with the knowledge, skills, and competencies acquired from the RUPP. This was especially the case for the ability to work in a team, critical thinking skills, obtaining experience in social work, communication skills, and the development of a gentle attitude (Figure 2).

Alumni also indicated a high degree of satisfaction with teachers, teacher attitudes and ethics, teacher skills and qualifications and matching the topic of study with the level of experience of teachers. They also ranked the research discoveries of teachers, their use of teaching tools and equipment, encouragement offered, timely lesson completion, lesson preparation, and teaching quality highly (Figure 3).

Figure 2. Satisfaction with knowledge, skill, and competencies

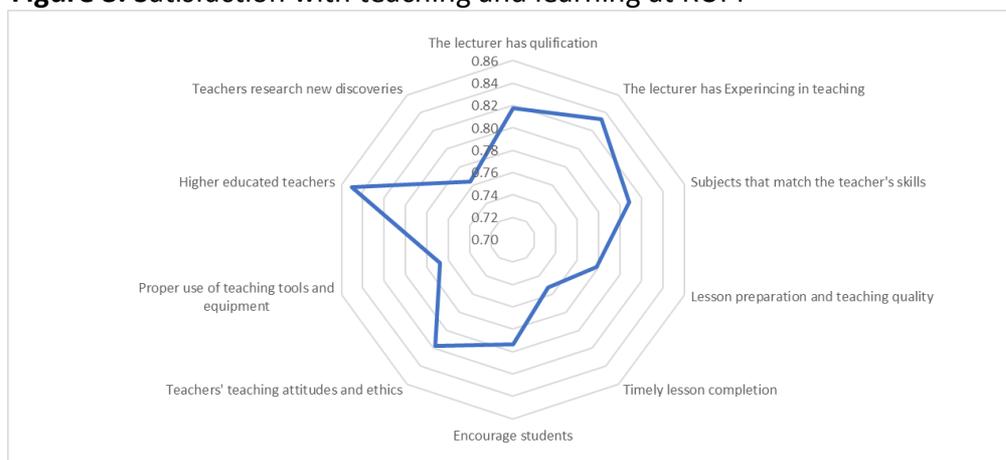


Notes: WAI = Weight Average Index measured on a five-point scale [Very low (VL) = 0.00-0.20, Low (L) = 0.21-0.40, Moderate (M) = 0.41-0.60, High (H) = 0.61-0.80, Very high (VH) = 0.81-1.00]; OA = Overall Assessment.

In Figure 4, the employability rate after graduation from the RUPP is presented. Overall, graduates from Science or STEM disciplines (61.6%) had greater access to employment opportunities than graduates from the Faculty of Social Sciences and Humanities (16.5%); Institute of Foreign Languages (IFL) (11.7%); Faculty of Engineering (FoE) 9.2%; and Faculty of Development Studies (FDS) (1.1%).

The percentage of students responding relative to the proportion of graduates, however, is so small from some facilities (i.e. FoE & FDS) that it may be assumed that graduates faced challenges accessing jobs. When tracing the job opportunities available to graduates, the data reveals that graduates had similar opportunities to access work. Remarkably, most graduates could find relevant jobs in their field of study in Phnom Penh. Another significant finding was that other provinces in Cambodia such as Kandal, Takeo, Kampot, Kampong Cham, and Prey Veng require similar skills to those required in Phnom Penh. In other words, these provinces also require graduates with 21st Century skills.

Figure 3. Satisfaction with teaching and learning at RUPP

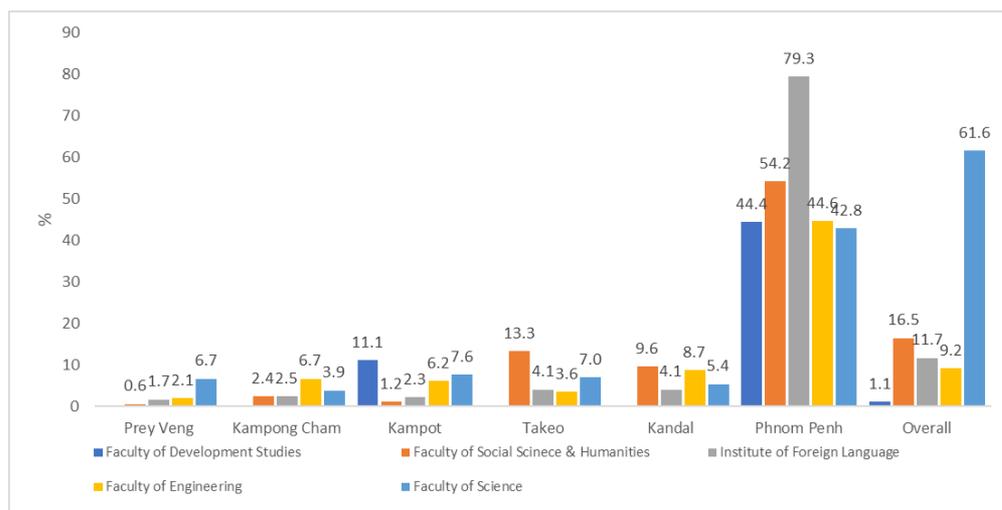


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Figures 5, 6, and 7 describe the relationship between communication skills and (1) the ability to work in a team, (2) knowledge of information technology, and (3) leadership skills. This correlation analysis confirms that

communication skills are strong and positively associated with knowledge of information technology and leadership skills. Communication skills were found to be beneficial for students in their future employment. When students are equipped with good communication skills, they are also likely to be competent in information technology and leadership.

Figure 4. Employment rates by province



Note: Chi-square test (P -value=0.000).

Figure 8 and Figure 9 show a strong and positive association between leadership skills and level of initiative. The analysis also reveals a strong and positive association between initiative and social work capacity. Graduate students with good leadership skills tended to have a high competency in demonstrating initiative and social work capacity.

There were several reasons why alumni chose to study at the RUPP including its reputation (66.1%), quality of education (44.6%), courses (38.2%), and availability of scholarships (16.7%). In recent years, the RUPP has

gained national and international recognition and as a result, more students have enrolled in courses (Figure 10).

Figure 5. Relationship between communication skills and ability to work in a team $r=.728$, $P\text{-value}=0.000$

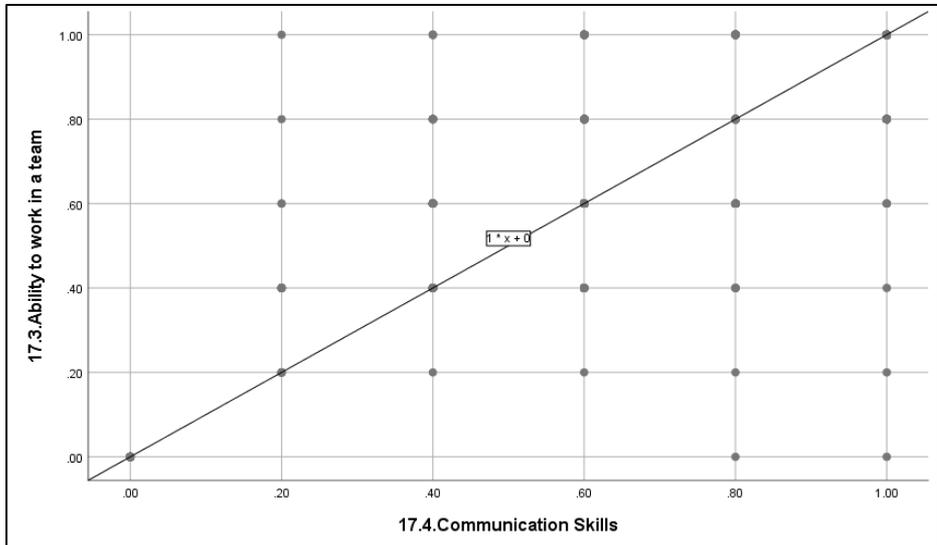


Figure 6. Relationship between communication skills and knowledge of information technology $r=.714$, $P\text{-value}=0.000$

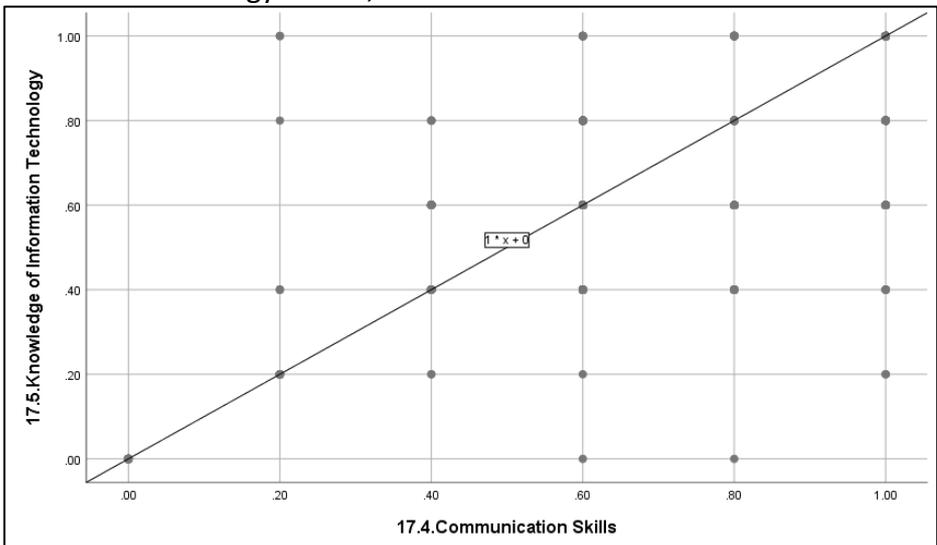


Figure 7. Relationship between communication and leadership skills $r=.705$, $P\text{-value}=0.000$

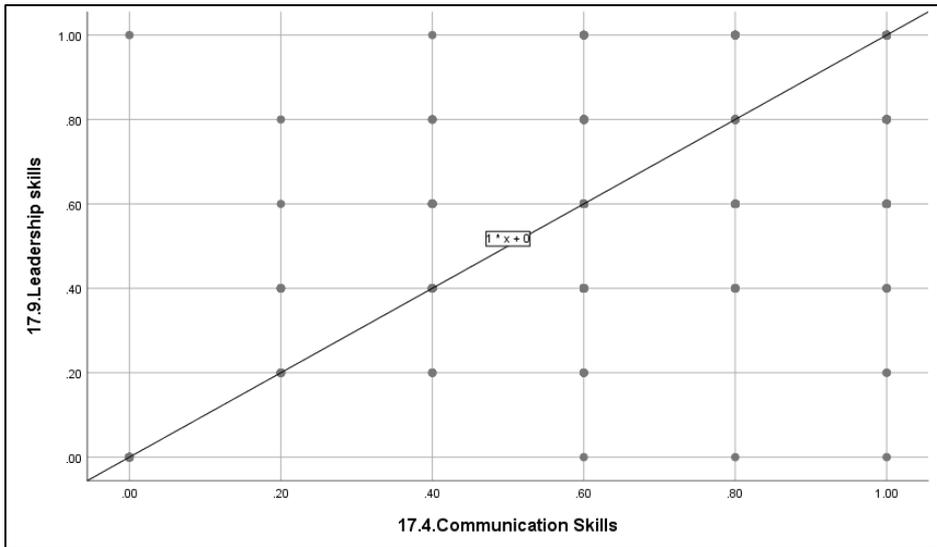


Figure 8. Relationship between leadership skills and level of initiative $r=.745$, $P\text{-value}=0.000$

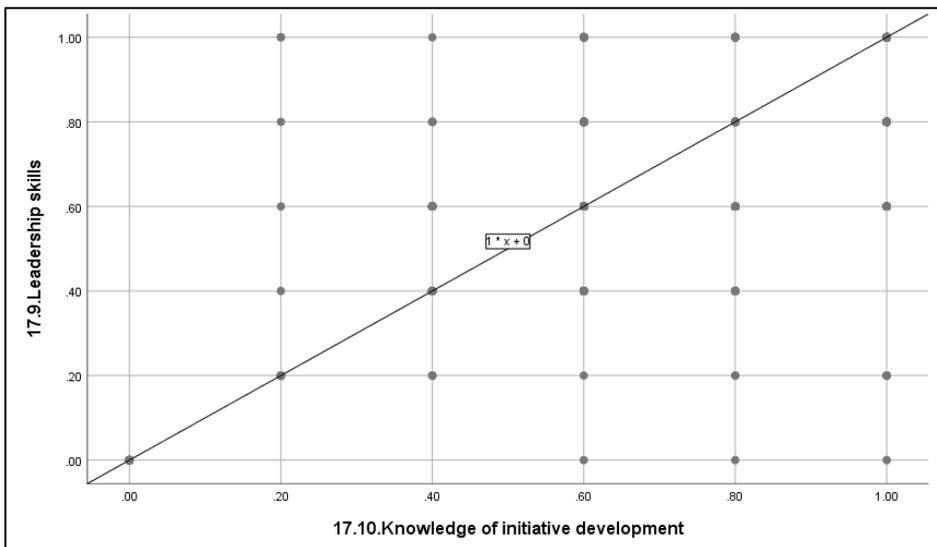


Figure 9. Relationship between level of initiative and social work capacity $r=.745$, $P\text{-value}=0.000$

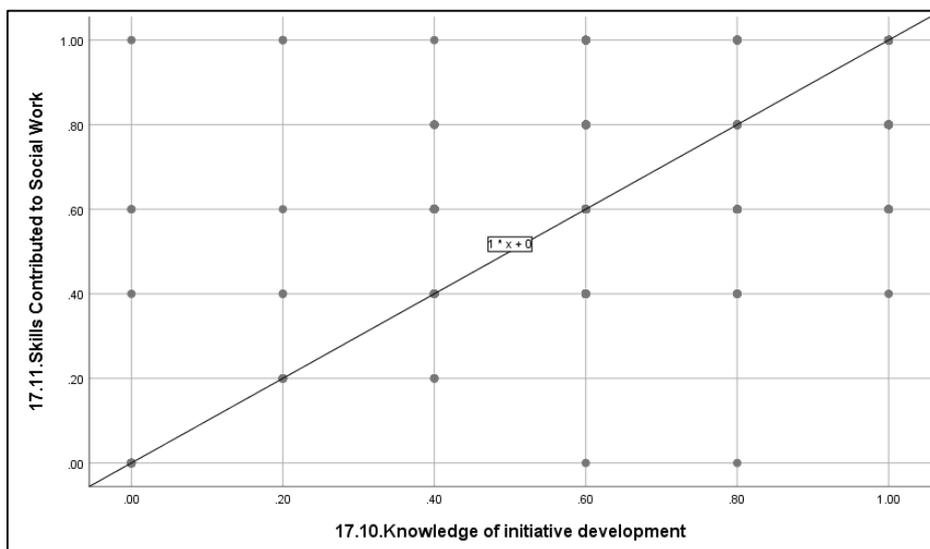
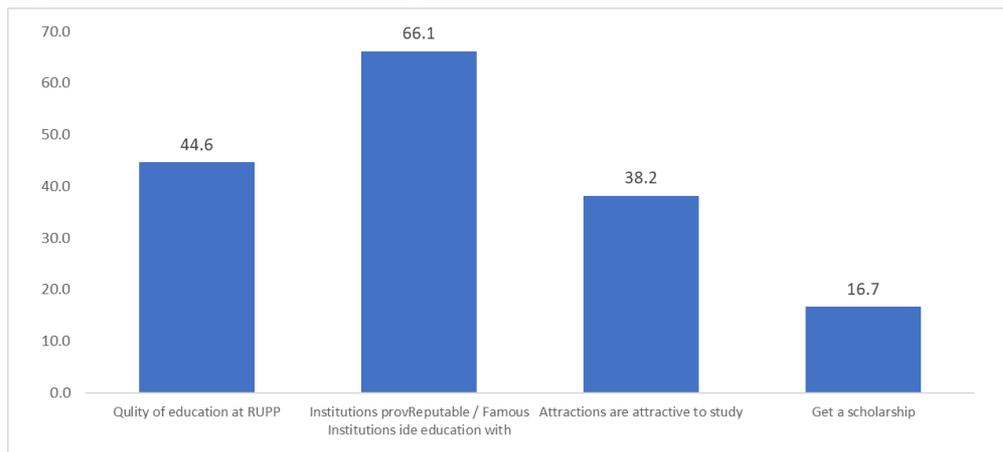


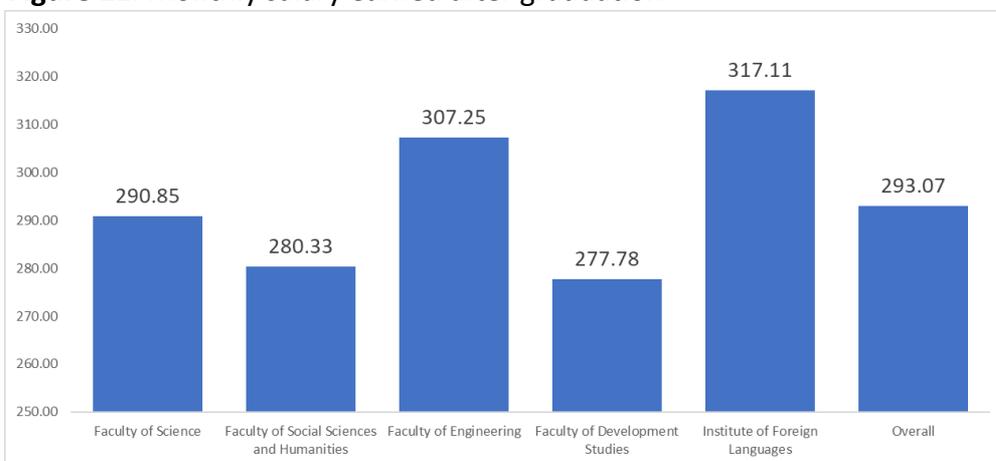
Figure 10. Reasons for enrolling in courses at RUPP



On average, alumni earned 293.07 USD per month following graduation, however, income inequality was high, especially for students from the Faculty of Social Science and Humanities (Figure 11). An ANOVA test reveals a significant difference in income across the five faculties ($P\text{-value} = 0.015$).

While alumni from the Institute of Foreign Languages earned as much as 317.11 USD per month, alumni from the Faculty of Development Studies earned as little as 277.78 USD per month. It is common for undergraduate students to hold either part-time or full-time jobs while studying to help cover school fees and living costs. On average, a student earned 193.80 USD per month while studying. A t-test analysis reveals that monthly income after graduation was significantly higher than monthly income earned while studying.

Figure 11. Monthly salary earned after graduation

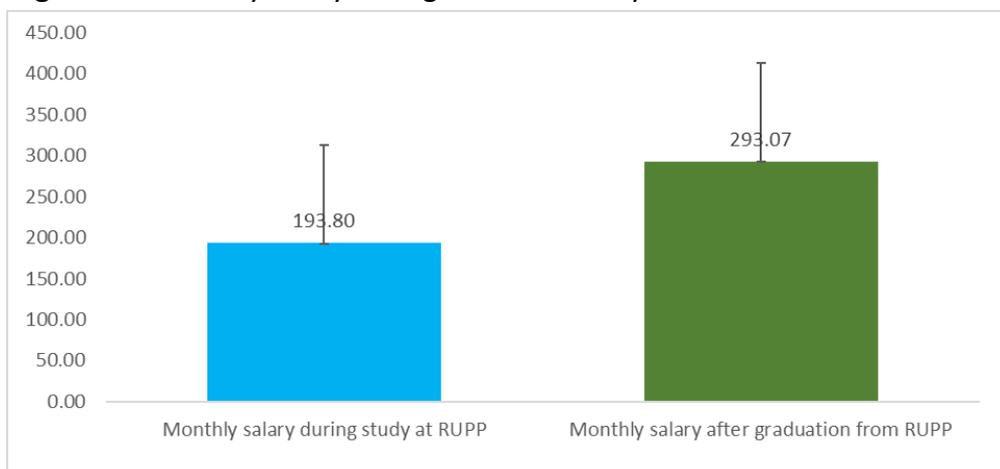


Note: ANOVA test (P -value=0.015).

Multiple linear regression was used to predict key influencing drivers of the salary of alumni after graduation from RUPP. The model indicated that higher salaries are more likely when (1) the curriculum responds to the labour market, (2) the curriculum adheres to national policy, (3) students present at conferences, (4) students publish a thesis or a journal article, (5) the

restaurant provides affordable meals for students, and (6) job finding services are provided to students

Figure 12. Monthly salary during and after study at the RUPP



Note: t-test (P-value =0.000).

It was also found that alumni may gain higher salaries when RUPP (1) improves curriculum in response to the labour market, (2) improves national policy, (3) encourages participation and presentation at conferences by students, (4) published the work of students, (5) provides a better connection with employers during studies, and (6) improves the job services offered by the RUPP.

Multiple linear regression was also applied to predict factors influencing promotion opportunities obtained by alumni. These included the application of knowledge and technology, career and skills development, working environments, knowledge of creativity, and communication skills. Higher levels of access to the factors help to increase the chances of promotion.

Table 1. Key drivers influencing salary of students after graduation

Attributes	B	Standard error	P-value
(Constant)	0.850	0.138	0.000
Curriculum responds to labor market	0.142	0.052	0.006
Curriculum responds to societies needs	0.089	0.056	0.114
Curriculum adheres to national policy	0.100	0.048	0.039
Curriculum contribtues to global development	-0.042	0.056	0.453
Curriculum is linked to research	-0.089	0.050	0.073
Participation and presentation at conferences	0.156	0.051	0.002
Publication of a journal article and/or thesis	0.127	0.047	0.007
Classroom environment appropriate to the number of students	0.033	0.038	0.385
A good learning environment at the institution.	-0.088	0.046	0.056
There are sufficient vehicles for the number of students	-0.022	0.044	0.614
The restaurant has reasonable services for students	0.087	0.042	0.036
Provision of counseling services for students	-0.001	0.049	0.986
Provision of health services and health education programs	0.053	0.045	0.242
Students are able to express opinions and provide constructive criticism	-0.061	0.047	0.195
Provide job finding services for students	0.203	0.042	0.000

Table 2. Key drivers influencing promotion opportunity of students after graduation

Attributes	B	Standard error	P-value
(Constant)	-0.029	0.111	0.795
Application of knowledge	0.362	0.040	0.000
Career and skills development	0.274	0.045	0.000
Scope of work and responsibilities	-0.032	0.042	0.452
Working environment	0.246	0.040	0.000
Critical thinking	-0.013	0.046	0.786
Creativity	0.099	0.047	0.036
Ability to work in a team	-0.006	0.047	0.902
Communication skills	-0.121	0.050	0.016
Use information	0.092	0.052	0.075
Use of media	-0.040	0.047	0.399
Ability to use technology	-0.055	0.048	0.251
Gentle attitude	-0.060	0.046	0.196
Leadership skills	0.083	0.044	0.062
Level of initiative	0.035	0.049	0.475
Skills in social work	0.049	0.047	0.298

The regression model outlines the essential factors related to the ongoing career development of graduates. These included education-related theories and practices; applying the skills and knowledge learned while studying; skills being closely linked to future employment; knowledge obtained being

relevant to Cambodian society; the capacity to analyze and resolve career challenges; access to stable employment; the capacity to maintain good workplace relationships; the capacity to use information technology; satisfaction with the quality of education provided; and the influence the course you completed had on shaping your career.

Table 3. The aspects of education that are important to the careers of RUPP graduates

Attributes	B	Standard error	P-value
(Constant)	0.087	0.086	0.311
Education related theories and practices	0.090	0.032	0.005
Skills and knowledge accessed	0.107	0.031	0.001
Skills attained being closely linked to future employment	0.229	0.033	0.000
Knowledge being relevant to Cambodian society	0.111	0.031	0.000
The capacity to analyze and solve career challenges	0.098	0.036	0.006
Access to stable employment	0.077	0.038	0.044
The capacity to maintain good working relationships	0.094	0.039	0.016
Improved creativity	-0.022	0.037	0.556
Capacity to use information technology	0.067	0.030	0.023

Capacity to become an entrepreneur or establish a business	0.044	0.029	0.129
Sufficient English language skills	-0.050	0.029	0.085
The requirement to complete an internship before graduation	-0.029	0.026	0.265
The usefulness of an internship in accessing employment	0.014	0.028	0.617
The usefulness of the internship in building your capacity in your current job.	0.021	0.033	0.517
You would recommend your course to other students	-0.059	0.031	0.057
You are satisfied with the quality of education provided	0.090	0.032	0.005
The course completed helped you shape your current career	0.101	0.032	0.001

The regression model indicates that critical thinking, creativity, and the ability to use technology are key variables that influence whether the skills and knowledge accessed at RUPP may be applied in a future career.

The RUPP has paid attention to the quality of education and employment opportunities for its graduates via annual tracer studies. The findings of these studies have been used to revise, plan and design the curriculum. The vision of RUPP is to be the flagship university in Cambodia, with a national and regional standing in teaching and learning, research and innovation, and

social engagement. Thus, the findings of tracer studies as part of the monitoring and evaluation system at the RUPP are used to track the progress of the Strategic Plan (2019-2023) and for continuous quality improvement. Improvements in the quality of education through curriculum revision are applied to meet the demands of society and turn the unique vision of the RUPP into a reality.

Table 5. The skills and knowledge RUPP graduates apply to their current job

Attributes	B	Standard error	P-value
(Constant)	1.302	0.153	0.000
Knowledge of critical thinking	0.253	0.045	0.000
Knowledge of creativity	0.113	0.046	0.014
Ability to work in a team	-0.062	0.049	0.203
Communication Skills	0.023	0.054	0.667
Knowledge of Information	0.073	0.057	0.203
Knowledge of Media	-0.023	0.055	0.673
Ability to use technology	0.100	0.048	0.037
Gentle attitude	-0.069	0.048	0.148
Leadership skills	0.080	0.052	0.121
Knowledge in initiating development ideas	0.002	0.057	0.978
Skills in participating in social work	0.091	.052	0.078

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