



# HIGHER EDUCATION INSTITUTIONS INFORMATION AND COMMUNICATIONS TECHNOLOGY SKILLS GAP ASSESSMENT



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# A. EXECUTIVE SUMMARY

The USAID Digital Workforce Development (DWD) project in Cambodia is a five-year project targeting Cambodian youth, equipping them with enterprise-driven skills, training, and qualifications that will enable them to contribute to Cambodian society and succeed in an economy that is becoming increasingly digital. DWD is designed with **three specific objectives**: (1) Strengthen targeted ICT certification, short courses, non-degree, and degree programs offered by Cambodian Higher Education Institutions (HEIs); (2) Enhance the capacity of Cambodian HEIs to meet accreditation standards; and (3) Increase scholarship, internship, and networking opportunities to support practical skill building and linkages to job opportunities for Cambodian youth.

In the interest of enhancing the ICT capacity of Cambodia, The Asia Foundation (the Foundation) and the University of California at Berkeley (UCB) with support from USAID have partnered to conduct two rapid assessments identifying the persisting gaps currently impeding development of Cambodia's digital workforce. Angkor Research was hired to assess HEIs delivering ICT programs and businesses hiring ICT graduates. Fifteen HEIs were selected, representing public and private universities, and urban and rural Cambodia. Employers were selected from various economic sectors including Finance and Accounting Services, Information and Technology, Digital Marketing and Technologies, Real Estate, Education, Food Delivery, Restaurants and Tourism. The report documents strengths and challenges and ends with recommendations on interventions that help meet the project's objectives.

## Strengths

- ◆ While there is not a standard curriculum the number of ICT courses HEIs are offering is continuously expanding.
- ◆ All faculty members' education credentials included specialization in IT or ICT.
- ◆ Gender representation in ICT is virtually equal.
- ◆ 11 of the 15 HEIs partner with local businesses and provide internships to their students.
- ◆ Ninety percent of the HEIs surveyed provided job placement services that included combinations of resume-writing workshops, mock interviews, internships, recruiter meetings and relationships with prospective employers.
- ◆ All HEIs have computer labs with enough computers for all ICT students to do their work and most provide "lending libraries" of computers, cables, and such.
- ◆ There is an established culture of businesses hiring interns and an openness to establishing partnership with universities.
- ◆ Based on interviews with higher education institutions and employers, there appears to be a mutual interest in collaboration, where expectations and willingness are somewhat in alignment.



## Challenges

- ◆ There is not a standard curriculum defining the core competencies an ICT program should have.
- ◆ Lack of knowledge in spoken English and ICT subject-specific English is a serious impediment for students in enrolling / completing ICT degrees, especially in rural areas.
- ◆ There is no consistency on the versions of software being used for teaching and many appear to be illicitly acquired.
- ◆ Current faculty often lack qualifications to teach courses that would benefit students in job placement.
- ◆ Students enrolled in ICT have a higher dropout rate compared to other faculties. The key impediments identified are lack of student financial resources to complete their studies, outdated curriculum, lack of teachers, and lack of quality teachers.
- ◆ Employers would like to see a more robust set of ICT skills among graduates with the highest requests for web-design and management of social media platforms.
- ◆ While there are internship programs, students struggle to balance internships with academic responsibilities, and are often not informed about internship opportunities, lacking the required skills, and the internship periods can be too short for an adequate real-life experience.
- ◆ While there are scholarships available, they are too few in number and most cover only the tuition. The cost of books, housing, transportation, etc. have to be borne by the student and is a serious barrier to access.

## Key Recommendations

- ◆ **Standardised curriculum:** While allowing individual HEIs to offer a breadth of courses, establish core competencies in all ICT subjects, a minimum national standard that is consistently available in all ICT graduates.

- ◆ **Faculty development:** Capacity development of the faculty to ensure their knowledge is current and valid in a rapidly changing environment. Example: Provide continuous training on newer versions of hardware and software included in the curriculum.
- ◆ **Partnering with businesses:** Engage the Royal Government of Cambodia (RGC) to facilitate relationships between HEIs and private business to increase interest in partnerships, by offering incentives to businesses (e.g., tax breaks, cost subsidies, grants, etc to participating businesses).
- ◆ **Scholarships:** Increase the number of scholarships, expand coverage, and improve processes to increase access to the scholarship opportunities.
- ◆ **Job placement:** Improve the current job placement services to increase student confidence in job search and during interviews.
- ◆ **Improve employability (internship / soft-skill / English / placement center)** to increase opportunities for students to gain practical experiences during their study and be ready for a new job.
- ◆ **Internet Infrastructure:** While internet access has reportedly reached 98.5% of the population as of 2019, it generally refers to the number of connected mobile phones. Reliance on mobile networks for internet access daily is challenging, and it is recommended to provide good internet in centralized resources – e.g., public libraries.





## B. PROJECT BACKGROUND AND OBJECTIVES

The USAID Digital Workforce Development (DWD) project in Cambodia is a five-year project targeting Cambodian youth, equipping them with enterprise-driven skills, training, and qualifications that will enable them to contribute to Cambodian society and succeed in an economy that is becoming increasingly digital. DWD is designed with **three specific objectives:** (1) Strengthen targeted ICT certification, short courses, non-degree, and degree programs offered by Cambodian Higher Education Institutions (HEIs); (2) Enhance the capacity of Cambodian HEIs to meet accreditation standards; and (3) Increase scholarship, internship, and networking opportunities to support practical skill building and linkages to job opportunities for Cambodian youth. The purpose of this report is to assess the current opportunities and challenges in Cambodia, and to give recommendations on interventions that help meet the above objectives.

Prior to the COVID-19 pandemic, Cambodia's economy was ranked among the top 15 fastest growing economies in the world, with an average of seven percent annual per capita growth since the year 2000. However, this growth has been mainly fueled by industries with low use of technology and a corresponding labor force that has lower skills compared to other members of the Association of Southeast Asian Nations (ASEAN). For Cambodia to fully benefit from its integration into ASEAN, it needs to increase its investment in the education sector to produce a more skilled labor force with an emphasis on developing skills in technology use. To achieve this goal, Cambodia needs to improve its institutional capacities in higher education institutions (HEI), particularly its curricula and the academic capacities of its faculty. Additionally, enrolment in information and communications technology (ICT) courses is currently concentrated in the capital and the pandemic is likely to have widened the digital divide between urban and rural students.

The Royal Government of Cambodia's (RGC) Rectangular Strategy sets out the vision to become an upper-middle income country by 2030 and a high-income country by 2050. To achieve this, a shift from labor-intensive industries toward a more digitally skilled workforce is necessary. Cambodia has a young and increasingly digitally savvy population, with over 65% being under 30. The number of mobile phones as of January 2021 was equivalent to 125% of the total population, and demand for ICT skills is expected to increase in the next two years, averaging 40% for ICT firms and 20% for non-ICT firms.

According to the Ministry of Education, Youth and Sport (MoEYS), as of 2018, there were 123 public and private HEIs in Cambodia. Of these, only 38 universities/institutes currently offer four-year ICT bachelor's degree programs, with women studying ICT in these 38 universities representing less than 11%. Furthermore, only 17% of all ICT students study outside of the capital city, Phnom Penh. In Cambodia, university graduates represent 4.8% of the population aged 25 years and older, while the ASEAN region average is 12.9%. Despite various governmental efforts to address the skills gap, further attention and development is required. Studies on digital skills gaps show a lack of ICT-related professional skills as well as soft skills in the areas of communication, language, leadership, management, problem solving and foreign language skills.

Scholarships provide necessary pathways for many underprivileged Cambodian men and women to pursue higher education in Cambodia and abroad. The pathway for these opportunities is not clear. While there is a lack of funding, a clear system for selecting beneficiaries, managing disbursements, and selecting national and international institutions is not present.

In the interest of enhancing the ICT capacity of Cambodia, The Asia Foundation (the Foundation) and the University of California at Berkeley with support from USAID have partnered to conduct two rapid assessments identifying the persisting gaps currently impeding development of Cambodia's digital workforce.





## C. METHODOLOGY

To better understand the current state of ICT skills in Cambodia, their utility in different business sectors, and the educational environment available to foster these skills in the kingdom, surveys with employers and Higher Education Institutions (HEI) were conducted by Angkor Research (Angkor) in close coordination with the Foundation.

From a list of 128 HEIs, 38 offered courses or degree programs in ICT, and of these 15 were selected to participate in the assessment. Of these 15, there were 10 public universities and five private, eight were located in the capital Phnom Penh and seven in the provinces. The survey topics covered included programme background, programme capacity, challenges to their ICT programmes, existing student benefits (e.g., resources and scholarships) and private business partnerships; policies and strategies; and graduate outcomes.

Employers were selected from various economic sectors including Finance and Accounting Services, Information and Technology, Digital Marketing and Technologies, Real Estate, Education, Food Delivery, Restaurant and Tourism. The survey topics for employers focused on defining what a quality partnership with a HEI can be, on providing internships to ICT students and also scholarships. Employers were largely concentrated in Phnom Penh (90%) with the remaining Employers being in Siem Reap Province.

Two quantitative instruments were developed in English and translated into Khmer where they were adapted to the cultural context. In total, 20 surveys with Employers and 15 surveys with HEIs were completed for a total of 35 respondents. The surveys report: “The Higher Education Institutions Information and Communications Technology Skills Gap and Employer Ability Rapid Assessments: Final Report” was developed by Angkor Research. In addition to the surveys, data was collected from stakeholders through key informant interviews and focus group discussions through consultation workshops.

### Report Objectives

This report is intended to share the findings of a rapid assessment of HEIs and their capacity for the development of ICT skills in Cambodia. This includes faculty qualifications, scholarship offerings, internship offerings, current engagement with the private sector, and interest in program expansion and collaboration opportunities. Additionally, this report is intended to share the results of a rapid assessment of in-demand ICT skills among various private businesses in different sectors, as well as their interest and existing engagement with HEIs on addressing the ICT skills gap in Cambodia. This report is a summary version of the surveys report (developed by Angkor Research) and findings from the key informant interviews and focus group discussions.

## D. HEI - KEY FINDINGS

This section divides the key findings into two parts: 1) areas that demonstrate HEIs are continuously addressing and showing improvements; and 2) areas not getting enough attention from the HEI administrators. The items documented are extrapolating from the assessment's collection of data. Each section is mapped to one of the three objectives of this project.

### Objective 1: Strengthen ICT programming in Cambodian HEIs

#### Strengths

- ◆ While there is not a standard curriculum, the number of courses being offered is continuously expanding.
- ◆ HEIs offer supplementary learning materials (SLM) for ICT courses and these are popular among students as they deepen the learning.

#### Challenges

- ◆ All HEIs do not offer a specific degree in ICT, and instead offer courses covering a variety of subjects.
- ◆ The curriculum offered in degree programs or as courses vary across HEIs, reflecting different priorities in curriculum development. There is no set of standard minimum curriculum requirements set for an ICT degree.
- ◆ Students need to have a strong knowledge of spoken English and English in ICT to succeed in their studies and for job placement. However, very few HEIs offer English language courses. This is an even greater problem for students studying ICT in the provinces.
- ◆ Beyond English, soft skills such as critical thinking, leadership and problem solving are important skills for prospective employers. However, the HEIs in general do not include these in their curriculum, and even if they do, there is an opportunity for improving the quality of materials.
- ◆ The HEIs charge students a fee for the SLM and scholarships do not cover SLMs.
- ◆ There is no consistency on what versions of software are being used for teaching and many appear to be illicitly acquired in the market.

### Objective 2: Accreditation of Cambodian HEIs and strength of the faculty

#### Strengths

- ◆ Fourteen universities are accredited nationally and one internationally.
- ◆ All faculty members' education credentials included specialization in IT or ICT.



## Challenges

- ◆ It is likely that this is institutional accreditation and not that of the ICT curriculum, as there is no standard curriculum.
- ◆ Only 60% of the faculty had a master's degree or higher.
- ◆ Current faculty often lack qualifications to teach courses that would benefit students in job placement.
- ◆ Accreditation of ICT programmes, though reported by most HEIs, is likely set by the institutions themselves based on the course variation between HEIs. This compartmentalised accreditation is unsurprising: it is expected that programme accreditation is connected to the university itself (i.e., institution-level accreditation qualifies all programmes for accreditation status). This is problematic when seeking an accredited institution for study as they each have different standards. Defining ICT programme accreditation itself is challenging where accreditation in international contexts is based on Cisco Systems Networking Academy (CSNA) standards. The problem therein is the focus on networking and cybersecurity, missing other aspects of ICT. At best, it would only allow for accreditation of aspects of HEI ICT programmes, but not entirely. Moreover, not all HEIs have entire ICT programmes and therefore face greater challenges in gaining programme-level accreditation.

## Objective 3: Increase access to ICT programmes in HEIs and improve job placement

### Strengths

- ◆ Gender representation in ICT is virtually equal.
- ◆ Enrolment in ICT courses is popular as compared to other courses.

- ◆ HEI administrators are taking steps to address the drop-out rate, but more focused research needs to be done to get more clarity on the reasons.
- ◆ Eleven of the 15 HEIs partner with local businesses and provide internships to their students.
- ◆ Ninety percent of the HEIs surveyed provided job placement services that included combinations of resume writing workshops, mock interviews, internships, recruiter meetings and relationships with prospective employers.
- ◆ All HEIs have computer labs with enough computers for all ICT students to do their work and most provide “lending libraries” of computers, cables, and such.
- ◆ There is an established culture of businesses hiring interns and an openness to establishing partnership with universities.
- ◆ Internships end with either job offers or letters of recommendation.
- ◆ Based on interviews with higher education institutions and employers, there appears to be a mutual interest in collaboration, where expectations and willingness are somewhat in alignment. On one hand, employers are mostly willing to collaborate and improve ICT programme infrastructure, if collaboration is not a substantial financial undertaking (e.g., scholarships or grants beyond what is already being offered). Likewise, HEI expectations in terms of support from employers focus on internships and other experience-driven opportunities rather than financial support for students. This is an important point of alignment where an understanding about the nature of partnerships is compatible, opening channels for collaboration.

## Challenges

- ◆ Students enrolled in ICT have a higher dropout rate compared to other faculties. The key impediments identified are lack of student financial resources to complete their studies, outdated curriculum, lack of teachers, and lack of quality teachers.







- ◆ Lack of coordination between administrators and faculty on prioritizing responses to address student dropout rate, resulting in different actions being taken.
- ◆ The average number of ICT students is 298 per HEI and the average number of scholarships available is 79. Of these 79, there is not a specific number set aside for ICT students.
- ◆ The number of internships offered vary with no data kept on whether these led to job placements for the interns.
- ◆ More research needs to be done to determine how the job placement services can be strengthened and data needs to be kept for verification .
- ◆ Forty percent of HEIs with job placement services do not offer these services to graduates—a missed opportunity to support and develop an alumni network.
- ◆ Employers would like to see a more robust set of ICT skills among graduates, with the highest demand for web-design and management of social media platforms.
- ◆ Internships are mostly unpaid and very few businesses offer scholarships for ICT students.

# E. GENERAL RECOMMENDATIONS

## HEI development

- ◆ **Standardised curriculum:** While allowing individual HEIs to offer a breadth of courses, establish core competencies in all ICT subjects, a minimum national standard that is consistently available in all ICT graduates.
- ◆ **Meet market requirements:** Conduct periodic market research to ensure the curriculum is meeting demands in the formal and informal economic systems. At the time of this research, stakeholders expressed a demand for ICT students with skills in digital marketing, telecommunications, and knowledge of software used in the financial sector.
- ◆ **Faculty development:** Capacity development of the faculty to ensure their knowledge is current and valid in a rapidly changing environment. Example: Provide continuous training on newer versions of hardware and software included in the curriculum.
- ◆ **Financial resources:** As the government support is insufficient, connecting HEIs to receive support from other agencies such as The Asia Foundation, USAID, the World Bank, and the Asian Development Bank.
- ◆ **International collaboration:** HEIs would like to see an increase in international collaboration, particularly in increasing opportunities for exceptional students to study abroad. Opportunities for students to develop and bring their skills back to Cambodia would be largely beneficial to the development of ICT capacity in the kingdom. Currently, Australia does offer some scholarship opportunities to Cambodian students to study in prominent Australian cities, under the provision they return to Cambodia after their studies in hopes of using their skills to further develop the kingdom. This opportunity is only available at the graduate degree level, however.
- ◆ **Partnering with businesses:** Engage the Royal Government of Cambodia (RGC) to facilitate relationships between HEIs and private business to increase interest in partnerships, by offering incentives to businesses (e.g., tax breaks, cost subsidies, grants, etc. to participating businesses). It is recommended that this offer be extended only to ICT programs for now (and to those HEIs that provide the minimum standardized curriculum), as it would encourage all HEIs to provide / improve ICT programmes, students would have access to quality programmes in urban and rural areas, and ICT capacity would expand throughout the kingdom.

## Improve access and student retention

- ◆ **Well-equipped ICT resource centers:** Provide the hardware, software, and books needed to provide a meaningful educational experience for the students and to retain their interest. Ensure both hardware and software are upgraded to the newest versions.
- ◆ **International scholarships:** Provide scholarships to ICT faculty and students to study abroad and bring back their skills to Cambodia. There was agreement that this would greatly benefit the development of ICT capacity in the kingdom.

- ◆ **Students' input into curriculum development:** Change the current culture of curriculum modification being driven mainly by administrators and faculty to also include input from students, as they are more likely to be “in touch” with the current market demand.
  - **Hard Skills:** In consultation workshops, students recommended that the curriculum include IT Security, Web Development, Software Engineering, Robotics Engineering, Architectural Engineering, Civil Engineering, Photography, 3D and 4D design, Animation, Digital Marketing, Social Media skills, Project Management, and Research.
  - **Soft Skills:** In this section, one can perhaps extrapolate that students were interested in finding jobs, but were also interested in starting their own businesses. This is reflected in their choice of curriculum which included: leadership, teamwork, cultural understanding and body language, communication, self-management, entrepreneurship, problem solving, critical thinking, presentation, and public speaking skills.
- ◆ **Scholarships:** Students offered a lot of clarity on how scholarship programs can better meet their needs. Their suggestions were:
  - HEIs employ a Scholarship Advisor who can support students in fully understanding the scholarship application requirements;
  - Advertise scholarship opportunities on social media such as Facebook and Telegram;
  - Raise awareness of scholarship opportunities for studying abroad; and





- Scholarships should be comprehensive and include tuition, stipends that cover living expenses, study materials and housing. Currently, scholarships often only cover the tuition but not the books and this may be disproportionately benefiting only those students with access to supplementary sources of funding to cover costs.
- ◆ **Internet Infrastructure:** While internet access has reportedly reached 98.5% of the population as of 2019, it generally refers to the number of connected mobile phones. Reliance on mobile networks for internet access daily is challenging, where stability for platforms like Zoom or MS Teams is impractical. At minimum, to provide students with resources and internet access, these services may be available at centralized locations. Public libraries, for example, may be instrumental in increasing internet access and access to equipment (e.g., computers) in these areas. Moreover, with increased internet access, the implications for HEIs offering ICT education are increased access to students meaning increased enrolment whose tuition can go towards hiring faculty who are skilled in ICT but may reside in another part of the kingdom but can offer courses remotely.

## Improve employability (internship / soft-skill / English / placement center)

- ◆ Making internships a requirement for graduation, though this disadvantages HEIs in non-urban areas. One option is to build into the curriculum practical work with tangible outcomes that can be part of the student's portfolio – e.g., a developed web-site, Facebook page, TikTok videos, a QuickBooks application for a small business, etc.







◆ Students offered several recommendations for improving the internship experience. They are:

- A good system that informs students about available internship opportunities
- The skills needed for each internship should be clearly stated so that a student can be confident in their application
- If there are gaps in knowledge, HEIs can offer short courses to close that gap, as opposed to taking a full semester course
- Provide job interview skills to increase the confidence of the applying student
- The internships need to be three to six months long. Anything shorter limits their ability to effectively learn in the real-world environment.

It is recommended that internships be available only during year three or year four of study, and the first two be dedicated to the development of a strong foundation and English language skills. Additionally, to enable a student to balance internships with academic responsibilities, the course load during year three and four should be reduced in favor of more practical experience.





**Please find more detailed information in  
the report via the QR Code or link below:**



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