

**Evaluation:
Bridging the Gap between
Engineering Workforce skills needs
and young graduate competencies
to foster their employability
Phase II - 2019**

*Africa Catalyst Programme
Institute of Engineers Rwanda*

Document produced by Engineers Against Poverty August 2019



Summary

The Institute of Engineers Rwanda (IER) designed the original Phase I project around a core justification; that a gap exists between the theoretical knowledge and practical skill that graduate engineers hold. Whilst graduates possess strong theoretical grounding in engineering, limited opportunities and exposure result in low skill development. In turn, this lack of practical experience proves to be a barrier for employment. To address this gap, IER designed a project which would focus on raising the practical skill level of graduates; Bridging the Gap.

Phase I of the project was executed in 2017 and grant funding was awarded at the end of 2017 for Phase II, to be completed over two years 2018-2019.

The evaluation below considers the project as a whole before focusing on identifying the initial outcomes that have occurred as a result of Phase II in Year 1 (2018) and Year 2 (2019) as well as potential next steps. Engineers Against Poverty has again been impressed by the extensive thinking, strategic effort and continual commitment of IER. Their reasoning for the programme is sound, the evolution into a second phase was well managed and they have taken on board suggestions and areas of learning at each stage, including during Phase II between Years 1 and 2. Yet again, IER was pleased to see the overwhelmingly positive feedback from beneficiaries and mentors. As the programme has matured, so have the programme leads and the mentors and there is increasing ownership of the programme across the board.

This report will focus first on the recommendations made in the 2018 reports regarding the mentorship system, the rotation of projects and the implementation of training for specific skills. These are natural developments and changes to make to a relatively young programme, which is also constrained by lack of capacity and budgets. Moving forward, there are recommendations to collaborate with universities and other partners. IER is aware of the obstacles faced and is considering amendments and adjustments to the project design along the way.

Key Achievements



100% of interns completed their placements



100% of interns interviewed felt their theoretical knowledge had increased



100% of interns interviewed felt their practical skills had increased



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Project Justification

The table below considers the primary justifications for carrying out the project alongside evidence obtained during the evaluation process. As evidenced below, the reasoning for designing a project which offered graduates a practical engineering placement was justified.

Justification	Evidence
Engineering students graduate with a strong level of theoretical knowledge but weak practical skill	<ul style="list-style-type: none"> ✓ The average rating for theoretical knowledge was 4, in comparison to practical skill at 6, just as in 2018.¹ ✓ 13 of the 19 interview respondents stated that the biggest gap in their knowledge had been an inability to translate theory into practice, and the others cited a lack of hard, practical skills.² ✓ The mentors interviewed rated the interns' practical skills at 3.3 before the internship and 7.7 at its conclusion. ✓ 12 of the interview respondents identified translating theory into practice as the reason why they had applied for this internship. The others cited experience, career progression and the reputation of the programme. ✓ The engineering syllabus in Rwanda universities prioritises theoretical knowledge without sufficient space for practical skills development, often due to a lack of sufficient equipment per student. ✓ One mentor commented that, "Linking the professional work and the academic work was a knowledge gap, but also professional work. Understanding what is needed in the professional industry- this is a huge component. Secondly, there are some theories they have learned at school that they could not connect with the professional work. For instance, if someone had studied modulation, it's a theory, but understanding that modulation and how that modulation is used as a theory in the industry, that connection was missing."
Weak practical skills and lack of documented experience make it difficult for engineering graduates to secure employment	<ul style="list-style-type: none"> ✓ 16 interview respondents said that experience was the major obstacle to employment; the others described the competitiveness of the field and that this would give them the necessary edge. ✓ 100% of the interview respondents had applied for jobs previously, with an average of 9 jobs per candidate. One had applied to as many as 30. ✓ During the application process there is an exam and an interview at which questions are asked about practical work onsite and interns had previously been unable to answer them. However, as one intern commented, "Now we are in a good shape to get those jobs – we have seen techniques and new terms and I have found the answers to the questions I was asked in the exams. When they ask us now, I would know what to say."
Opportunities for graduate engineers to get practical experience is limited	<ul style="list-style-type: none"> ✓ Whilst all the interns (bar one) had enrolled in a previous internship, these internships (organised by universities) did not receive positive feedback. The one intern who had not had an academic internship had attended a polytechnic where these were not available. ✓ Interview respondents noted that in academic internships they were not given engineering tasks, they rarely learned skills, there was no supervision or follow up and often the internships did not give them much work to do. The internships were too short to engage with the project.

¹This score was obtained from the evaluation process with 19 interns, of 60. The questions asked interns to rate their practical knowledge and theoretical skill at the start and end of the programme.



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- ✓ Comparatively, interview respondents were very positive about the relative responsibility they had been given, the supervision and the learning curve on the Africa Catalyst project.
- ✓ Private sector and construction companies do offer internships, but only three interns reported that they had been able to do one. These are unpaid and the interview respondents independently stated that the practical placement was only possible because of the stipend given by IER, and there was still less follow up. The section on sustainability will cover this further.

Methodology

Data was taken from five main sources; monthly progress reports filled in by the interns between April and June, project documentation, interviews with 19 interns, interviews with five on-site supervisors and data drawn from the site visit reports from IER mentors.

The progress reports were designed by Institute of Engineers Rwanda, following the monitoring and evaluation training workshop with EAP in 2018. The progress reports largely focused on formative changes and feedback for the programme (such as priority skills to learn, rating the level of responsibility given and improvements the programme could make). This also afforded the interns a chance to evaluate the internship and their progress, alongside their personal journals and their mentors and supervisors' feedback.

The interviews were carried out with 19 interns and five mentors over the course of three days in July, halfway through the internship. The evaluations in 2018 and 2017 were carried out at the end of the internship, whereas a mid-point evaluation this year was felt to have more immediate value-add and more potential to form the conclusion of Phase II. The interviews were divided between the disciplines; ten civil, five electrical, and four in telecommunications. This included visiting six separate sites across Rwanda; fifteen interviewees inside Kigali and four within (due to time and geographic constraints) in order to get a broad scope of the type of project and internship within the programme.

Candidate Selection and Training

Candidate Selection and Examination

To select candidates for the programme, IER used the same process from the previous two years and drew on the good practice from that. IER invited applications to complete an assessment test, the results of which would decide which applicants gained places on the programme. These advertisements were circulated through social media channels, as well as the IER mailing list for its members. Many graduate engineers had registered upon leaving university, but not yet gained employment.

131 applicants applied for the internship, of which 54% were turned down following a series of tests on technical knowledge, aptitude and professional skills. The tests were developed by senior engineers for each engineering profession, the content of which was designed to be particularly rigorous. The one concern would be about the bias towards the university of Rwanda; 78% of the applicants were from the University of Rwanda and 90% of the applicants selected were from the University of Rwanda. Whilst the University of Rwanda – College of Science & Technology is the most prestigious academic institution for engineering in Rwanda it would be good to see further efforts to diversify the application body.



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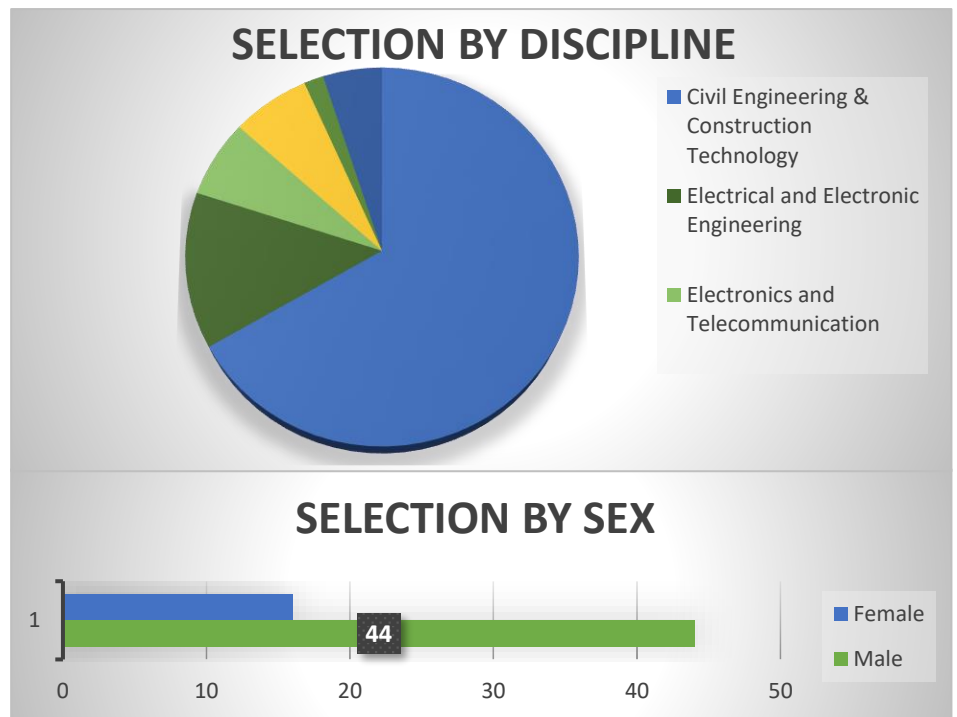
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Weighting was given to female applicants, as less than 25% of applicants were female and IER was endeavouring to honour their recent Gender and Diversity policy. This was however a huge improvement on the application process of 2018, where only 5% of applicants were female. In the end, there was a 44:16 male to female gender ratio (26% of interns were female). The process was conducted in a fair and clear manner and no recommendations can be made for improvement.



Training

Prior to placement, all interns took part in a one-day training workshop designed to prepare for them for placement. As the workshop was undertaken at a different time to the evaluation visits, specific comments on the content and delivery of the workshop cannot be made. From the evaluation visit, the content was described as an orientation day, focusing on professional behaviour and standards, workplace and internship expectations, safety standards and onsite regulations, with some time spent onsite for a practical visit. Particular mention was made of onsite behaviour and health and safety,

“The pre-internship training was great; meeting the IER staff was very inspiring” – Electrical Engineering Intern 2018

100% of interns interviewed gave positive feedback from the training day, saying that it was useful and engaging. Based on the responses captured from the interviews, there were no few changes or improvements which the interns could suggest. One intern who had missed the pre-internship orientation was particularly grateful that IER had found the time to give her an additional three hours of orientation.

Placements

Placements were located across Rwanda, reflecting IER’s commitment the interns to experience a wide range of options which would not otherwise be possible for them. To select projects, IER continued with the good practice from the previous two years and worked with their partners, the government organisations RITDA and the Rwanda Housing Authority Project, who identified megaprojects and projects sizeable enough for the internship. These partners then advised on the company, such as at what stage the projects were at, and IER made contact with the companies to see if internship placements would be feasible, beneficial and well-timed. Pre-placement, IER visited the companies before deployment and identified an appropriate mentor for the interns; normally a senior engineer with IER and therefore already known to the organisation.



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Project selection was complex and the level of detail in selection is a credit to IER's work ethic and values. Whilst IER tried to give priority to mega-projects, this was not always possible and raised other difficulties.

Two interns who were interviewed suggested that there should be more weighting given to the interns' preferences prior to starting on-site; for example, they should be able to flag whether their preferences were for civil engineering on roads or in building construction. Having discussed this with the steering committee there are informal conversations and interview questions about where the interns would like to be placed, but IER is restricted by the projects which are available, at the correct time for the interns to take up a placement and the organisations which have agreed to partner with them. However, if and when the project scales up, IER would need to implement a more formal way of selecting projects according to interns' chosen specialisation.

"We have learned how to erect precast concrete. In Rwanda this is the only company who does this kind of precast technology, and we have gained that knowledge." A Civil Engineering Intern 2019 on project selection

Recommendations regarding project placement would include:

- Increased communication with companies to improve the understanding of IER and the programme objectives before the interns arrive to improve internship schedules and training.

Initial Outcomes

The three main outcomes that were identified through the evaluation process were:

1. Increased practical skill
2. Solidified theoretical skills
3. Increased sense of employability

The primary objective of the programme was to bridge the gap between theoretical knowledge and practical knowledge, and therefore to improve the interns' practical knowledge. All interviewed respondents felt their practical skills had increased; the average score for practical knowledge was 4/10 before the internship and 8/10 afterwards.

In addition, there was also a marked improvement in theoretical skills as the internship solidified their understanding of theories, allowed them to practice the theory and that they also learned new theories. All interviewed respondents felt their theoretical skills increased; the average score for theoretical knowledge was 6/10 before the internship and 8/10 afterwards. As expected, and as in 2018, the gain in theoretical knowledge is much more marginal than that of practical knowledge, and the programme merely brought the average knowledge up to a comparative equality.

Finally, the evaluation process looked at an increased sense of employability. 100% of interviewed interns had applied for jobs



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before the internship process. On average, they had applied for 9 jobs each, although there was a wide range of 2 – 30. 84% cited experience as the biggest obstacle to gaining employment. As part of the job application process, applicants are given interviews or tests related to onsite activity or practical skills; questions which they were not able to answer at the time but which they reported feeling more confident about now as they had the necessary experience. As one intern mentioned, “We did not have enough experience, so we were able to take the written exam and get good marks but for the interview we didn’t have the experience and practical knowledge. They asked about knowledge from on the site, so we didn’t have enough site experience to pass the interviews. But now, even if I didn’t pass the interview stage, for sure the marks would not be the same.” This was a feeling echoed by the mentors. When asked about the employability of the interns, two of the five interviewed directly stated that they planned to hire one of the interns.

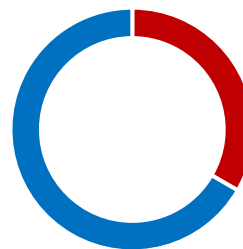
“Now I have more practice I will be able to apply in any company because I am more confident”

Overall, feedback from the internship was incredibly positive. EAP was pleased to note that all the interns interviewed thanked IER, EAP and the Royal Academy for facilitating this opportunity and several independently requested that more interns be included in the 2020 internship programme and that the internship be rolled out elsewhere.

However, it is important to address some of the concerns which may have been raised during this process. The key concerns EAP will address are:

- Project timing
- Communication & Language
- Duration
- Mentorship

To what degree is the internship meeting their expectations?



■ Not ■ Intermediate ■ High

Data taken from feedback forms from the IER supervisory visits in the first half of the internship.

Prior to the internship, the biggest gap in my knowledge was from lack of access to laboratory experiments. At university, 100 students would stand around a machine whilst it was shown to you over a few minutes. But here, we do the test with two people. They showed us how to use it and now we can operate the machines ourselves. For me, the other gap was relevant professional experience– I had to work in a casino since graduation for 8 months. This wasn’t civil engineering, I couldn’t practice my skills. This internship was the only way to continue my career.” – Civil Engineering Intern 2019



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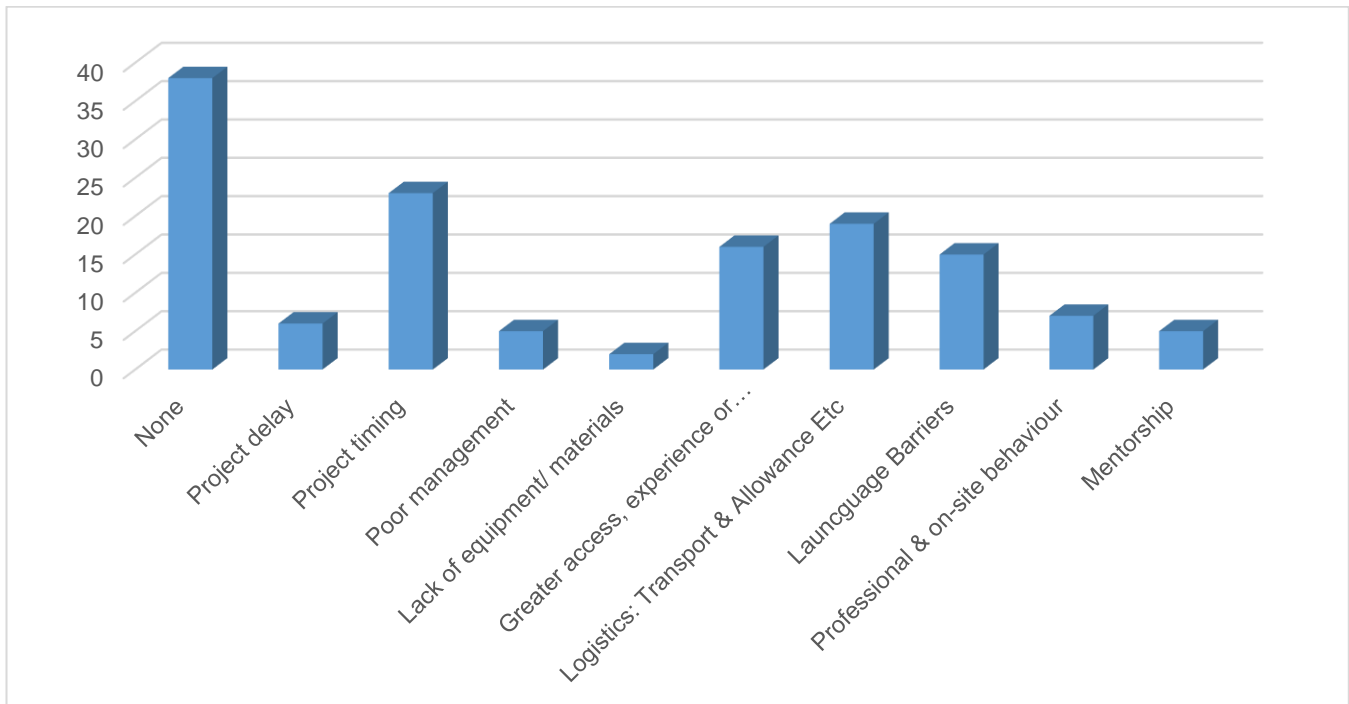
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A breakdown of the challenges as identified by interns during the monthly feedback surveys. Surveys were delivered via Google forms and were developed following the M&E training facilitated by EAP.



Project timing

In 2018 EAP made a number of recommendations around project timing. Over one third of the interns interviewed cited project timing as a major issue, which led to their experience missing critical skills development – for some, they had come too early in the project so that their activities had focused around only two tasks, others came too late in the project and missed the early stages which would give them a foundation for their later skills and the understanding of the design. IER put in considerable effort to improve this and whilst this was still one of the biggest challenges faced by the interns, it was only cited by 17% of the respondents of the feedback survey and by none of the interns interviewed. 100% of interviewed interns said that the project had been well chosen and that timing had not been an issues. EAP would recommend that IER continues to address the issue of project timing by considering project rotation for interns located at projects where they might not be exposed to a wide range of activities and skills. However, EAP recognises that this would be time-intensive and complex to arrange, and may have impacts on the strength of the mentorship and professional networks that the interns arrange.

Language & Communications

Some complaints centred around language barriers, both foreign language and technical languages. Interns frequently referenced the difficulties of developing onsite when the initial period of their

I began the journey of engineering at school but after graduating it was hard to face the world of professional engineering. I knocked on so many doors and they didn't open. But this internship opened that door by giving experience, teaching practical skills and getting us professional skills. It was important to continue the journey of engineering. – Telecommunications Intern 2019



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internship was required to learn the technical terms on-site. This could be handled by a pre-internship glossary of terms or should be included in university curricula.

There were a moderate number of complains around the language issues with foreign firms, when working at Chinese contractor companies, such as STECOL and CCEC, or Kenyan companies (where Kiswahili is the main language of communication). There were over 10 complaints in the feedback forms specifically pointing out that that there was poor communication with Chinese staff, or a lack of access to areas and equipment which they believed had a negative effect on their learning experience. This was, however, substantially fewer than 2018. One intern requested that their mentor be replaced with a non-Chinese mentor to aid their development. Since the Chinese contractors often were responsible for the larger, more complex megaprojects in Rwanda, IER had made specific pushes to ensure the interns were placed on these projects. Some interns in previous years have commended the experience they had with Kenyan and Chinese companies as there were many opportunities and a huge learning curve.

Two of the interns interviewed who were placed with STECCOL cited their biggest challenge as working with people from a different culture, with a different language, background and work ethic. On one site visit, an IER senior engineer noted that, “The Chinese contractor company did not want to collaborate with the interns during their internship. The site manager and representative of the project manager did not have the time to meet the senior engineer during the site visit. From a communication perspective the language limitation has been a negative factor in terms of knowledge transfer with the Chinese contractor. The mentor in charge of the interns explained how he supervised the trainees and how they assisted in daily tasks. As a recommendation on such a project the government should include as a requirement to contractors and supervision firms to promote knowledge transfer to interns during the project implementation. This will help interns to learn more and practice what they learned in school.”

Working with foreign firms should be considered an asset, if a challenge, as operating in foreign companies will be an important component of their engineering careers, however IER has made substantial progress in combatting this over the previous year, in improving relationships with the Chinese contractors and their organisation and interns and EAP recognises the positive steps here and that this would be a gradual change. However, further additional steps may be to:



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- Develop a glossary of technical terms and language on-site, with a specific index for the differences between French and English terms used on-site.
- Expand on efforts to involve Chinese engineers in IER and programme management.
- Make policy recommendations for the
- Prepare the interns for the possible obstacles at foreign companies, with the explanation that these are important and unique opportunities within Rwandan construction and a necessary professional development experience for future work

Concerns were raised by the interns about communication between their mentor and his superiors and with the contracting company as a whole. However, this should again be considered as part of the professional learning development of the internship, rather than something IER should be addressing. Similarly, IER should check with mentors and companies about the mandated working hours for interns as some interns stressed in their feedback forms that they were working more than 5 days a week. Their allowance would not be able to cover working these extra days.

At least four interns independently raised concerns about the other workmen onsite being insufficiently qualified and experienced.

“There are other experience of engineers we have learned from – when you are a fresh graduate you don’t know anyone who can help you, but with this internship you can meet people with different backgrounds who can help you, and they give you a chance to show them you are good.”

Internship Duration

26% of the interview respondents said lengthening the internship would be the biggest improvement for the programme, and it was mentioned separately in the feedback forms over 7 times. However, as in 2018, EAP would not recommend lengthening the duration of the internship as 6 months is a satisfactory internship length. The internships should not replace job applications and jobs post-graduation, nor should they replace the skill sets that the graduates should have learned at university. IER has taken positive steps to address the interns’ expectations regarding this.

IER should continue considering ways that the interns can capitalise on the 6 months that they are there. One recommendation would be for a wrap-up day for the interns at the end of 2018 in which the interns can present on their work as well as include sessions on CV writing, interview skills and the application process, as well as networking with other project managers. Interns had described a desire for more networking events and opportunities; such as a platform for all the interns to communicate during and after the internship or a job market platform, which included the companies involved in the internship.

- Specific short courses on; such as software, design and drawing, Excel, budgeting, occupational safety and health, financial literacy, to be managed by the companies where the interns are deployed
- Short courses on design and reading drawings to be implemented during internships
- Telecommunications interns found that a key obstacle was their lack of a climbing certificate which impeded them onsite. Whilst this is not a responsibility for IER or within the scope of the programme, perhaps they could work with universities or companies to increase access to climbing courses and certifications.



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The need for a laptop for these two courses should not be overlooked as this was also flagged as an obstacle for some interns, although the opportunity was there, they had neither the equipment nor the skills to follow up on it.


Mentorship

The influence of the mentors on the programme cannot be underestimated. 100% of the interview respondents said that the mentors had had a positive influence on their placement and helped them. In the 2018 feedback forms, when asked about improvements, interns recommended more or improved mentorship 51 times and remained a major concern for the whole duration. However, compared to that, only mentorship was only mentioned as a challenge in feedback forms 5 times. This is a huge improvement and there was a tangible development in the relationship with the mentors.


To combat the concerns around the mentorship system from 2018, IER invested more time and budget in it. In May they held another mentorship training day, facilitated by EAP. Although there were only 12 attendees, this was a higher turnout than previous years and there was intense discussion around the mentors' concerns and suggestions for the programme.

From June onwards, IER facilitated site visits to each project site by a senior engineer with IER staff members. In total 15 visits were carried out, to see 25 of the interns. This is indicative not only of greater oversight from IER and their maturing programme, but also of greater ownership across the board from IER members of the programme. The site visits also included template forms with a survey section and a narrative section, in order for IER to cross-compare the different site visits and standardise the feedback from the different site visits. The independent development of this M&E system is indicative of the skills gained by IER during this programme (between 2017-2019).

The site visits were a very successful element of the internship. Independently, many of the interviewed interns said that they had been encouraged by the regular follow up from senior members at IER as it was both motivational and strengthened their relationships with the institution and senior engineers.



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AFRICA CATALYST PROJECT PHASE II YEAR 2
VISITING OF INTERNS
REPORTING FORM

Instruction: Discuss with the interns on the progress of their internship and the challenges they are having during the period of their internship. Please fill out the form.

Name of the Senior Engineer	MUGWANEZA FRANCOIS
Email of the Senior Engineer	fmugwaneza2012@gmail.com
Number of Interns expected to be at the Site	2
Number of Interns visited (those who were present during your visit)	2
Supervisor/Mentor of Interns (Name)	MURALIHARAN KRISHNAN
Date	26/06/2019
The interns are being mentored at :	<input type="checkbox"/> The Office <input checked="" type="checkbox"/> Site
Based on the conversation you had with the interns, rate how their mentors are helping them during their internship	<input type="radio"/> Not helping <input type="radio"/> Normal <input type="radio"/> Much <input checked="" type="radio"/> Very much
Based on the conversation you had with the interns, are they meeting the expectations they had before being deployed for the Internship.	<input checked="" type="radio"/> Yes <input type="radio"/> No
Based on the conversation you had with the interns, at what level in the internship helping the Interns achieve their expectations.	<input type="radio"/> Low <input type="radio"/> Intermediate <input checked="" type="radio"/> High
Based on the conversation you had with the interns, if you are an Employer in need of Personnel, could you hire some of them.	<input checked="" type="radio"/> Yes <input type="radio"/> No

1. Eng. Cecile Uwimana visited the intern Ineza Nuru deployed in Reserve Force at Nyamata. She is working on the proposed construction of Blue Lakes International high school.

The intern is well treated and guided as his mentor Eng. Kibuye Jean Pierre confessed that she is following all the recommended engineering standards to the site.

She found the site at the starting stage, because her internship began on 29th April 2019 while the project started on 13th April 2019. So, she had opportunity to learn from the setting out which helped her to increase her capacity of reading and interpreting construction drawings before implementation.


She is now able to guide and supervise setting out, excavation, foundations, fixing the reinforcement, fixing formwork, casting concrete for the similar buildings.

She is fulltime on site and punctual. The supervisor recommended her as his potential active engineer for his future projects.

She is thanking her mentor, IER and our funder Royal Academy of Engineering for such opportunity to increase her engineering skills.

With the above testimony, I appreciated the way the mentor supported her and request IER to continue this important mentorship program for young graduate engineers as much as possible.

Thank you!


 Eng. Cecile UWIMANA
 20/06/19
 Date & Signature of the Senior Engineer



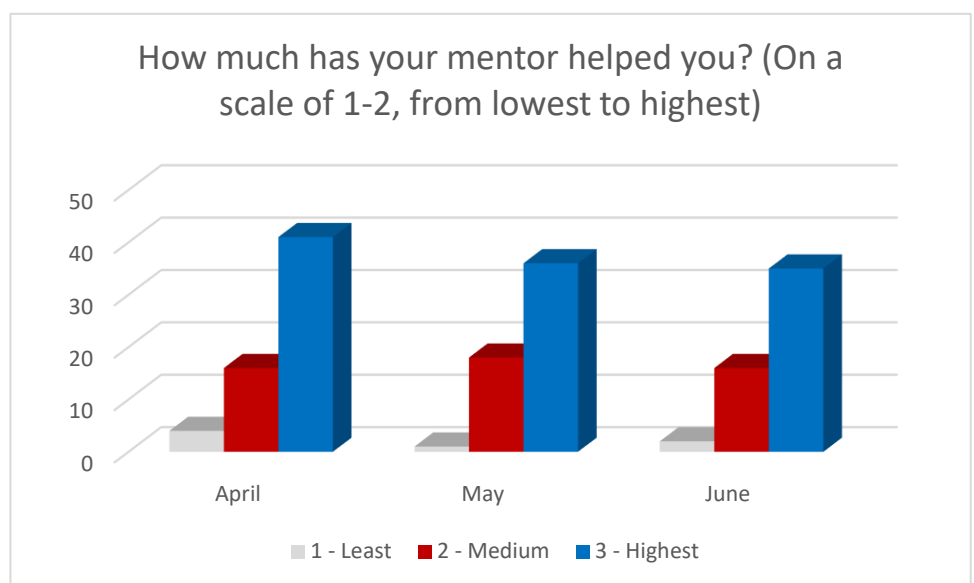
Moreover, it was an excellent opportunity for senior engineers at IER to engage with the internship programme and the evaluators on these site visits made recommendations ranging from the mentorship scheme, project placements, intern selection and university curricula.

To improve the mentorship for the next programme, EAP recommends that they:

- Include a wrap up session for the interns and mentors, in which the mentors receive certificates of recognition for their input.
- Encourage mentors to share the mentorship by involving other onsite experts who could supervise them on specific tasks and projects
- Shift the focus of the mentor training day for 'training' to lesson sharing, for two hours on an evening or weekend, so that the mentors can share good practices with other mentors and discuss the obstacles they found. This may encourage higher attendance at the meeting and closer cooperation during the 2020 placement.

Follow Up

Even at the beginning of the internship many of the interns interviewed voiced concerns about their next steps following the internship, and a desire to meet with and learn from the other interns' experiences. IER has struggled to retain a relationship with the alumni of the internship programme. A solution to both of these challenges would be to focus more on the follow up period after the internship. This could include:



- A wrap-up session for the 2019 interns, at which alumni of the internship programme could share their experiences and tips for next steps.
- Development of a platform through which the interns and mentors could communicate (such as advertising job postings, scholarship or study opportunities)
- Consider running CV and interview clinics for alumni of the programme in the 6 months following the internship period.

Interns had expressed a desire for a post-placement exam or other forms of assessment, such as through presentations, however, this goes beyond the scope of the programme and IER and the internship placement should not be considered an extension of their university careers.

Sustainability

One of the key concerns identified by the 2017 evaluation was the sustainability of the model. Whilst it was clear that such internships were providing invaluable opportunities to graduates, the need for longer and stipend placements was overly reliant on Royal Academy. This is no longer a concern for EAP. IER has made clear steps to address this and lay the groundwork for alternative sources of funding and have embedded these in their 5 year plan.



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In the 2017 evaluation, EAP made the following recommendations:

1. Increase the yearly IER fee for corporate members, reinvesting the additional revenue into graduate internships
2. Lobby the government to provide funding for engineers to undertake practical placements, either during university or after graduation
3. Work with universities to adapt the engineering syllabus to include more practical placements
4. IER to identify additional funding sources

IER has since focused on the second and third recommendations. In 2018, IER strengthened their relationship with government bodies, such as the government department in charge of central capacity building, the Rwandan Development Board, and through all partners with the stakeholder meeting in November 2018. Since then, on July 18th, IER has signed an MoU with the RDB to scale up the project. This is a concrete step which indicates both RDB's commitment to this programme and therefore the likelihood that it will have lasting results, and the reputational strength of IER's Bridging the Gap programme.

“After graduation I had a professional internship at RURA in ICT for 9 months. The difference is that our supervisor here is much more concerned with us, he gives us his time, if we have problems we go to ask him and we understand it well. But at RURA my supervisor didn't have time. I learned more from here in 3 months than there in 9 months because I was being given work and supervised” - Telecoms Intern 2019

The third recommendation around working with universities is intended to be a part of their programme in 2020, funding dependent, which will have a specific focus on accreditation. This provides a particular opportunity around the academic or industry internship completed by all the interns in their academic course. There was a lot of criticism of this internship as it was only 5 weeks long, there was no stipend so interns found it difficult to find the money to always arrive on site and there was very little oversight. Critique of this internship included: no oversight, no mentorship, no explanation for activities onsite, no opportunity to practice skills or use equipment. As one intern commented, “It was more like visiting- no one checked on me.” Because of the lack of guidance from supervisors and mentors on-site, it was hard for the students to use practical skills or develop. Lastly, one intern commented that as it came in their third year, there were skills learnt in their fourth year that would have been critical to the internship so they were unable to get the most out of the opportunity.

Only one intern referred to an internship similar to this one; “I had a professional internship for 3 months. This was with the Rwanda Energy group, a government company, through their capacity development fund. It was a good internship, in a power plant, but many things had already been installed and I didn't have the opportunity to practice anything. Here I can learn by practicing; the company does electrical installation, the internship is controlled. This gives you motivation. The other internship was not controlled like this, no one comes to visit like your mentor or supervises.”



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Mentors and on-site supervisors were equally critical of the academic internship programme. The senior engineers felt that the students on the academic internships did not enter the organisation with the right attitude; rather than being focused on their own skills development, they focused on marks and this was not beneficial to their professional experience. “The university interns are looking for marks; they don’t ask you deep questions, they just want to fill the papers. The IER interns are here for their careers – they ask you professional questions, they ask for future guidance,” commented one mentor who had supervised both sets of interns on a construction project.



Given that academic internships are a mandatory requirement for engineering students to graduate and they are a critical element, when executed correctly, IER should consider how to create maximum impact by working with universities and the companies where the students are located to improve the standard of the short term internships during their university careers.

Whilst IER did not focus predominantly on the first recommendation, it is clear that the internship programme has been vital in building up the reputation of the institute. Notably, for the first time, interns cited the reputation of the programme as one of the critical factors for why they applied; alumni from previous rounds of the internship had recommended the programme to them and they felt the fact that the programme was run by practicing engineers was an asset. In terms of building up the reputation of the organisation, this programme has been vital in enrolling youth members and strengthening their investment in it. Three of the 19 interns interviewed said that they had had an additional internship beyond the academic internship but that this internship was an improvement on those because of the close follow-up and supervision.

IER’s strategy has therefore gone beyond any recommendations made by EAP or otherwise in regards to seeking permanent funding and sustainable measures to continue the good practice they have set out and work with the momentum they have created. This has been an excellent example of utilising local capacity to escalate the original funding and technical expertise provided by the Africa Catalyst programme. Moreover, EAP has been impressed by the development of the internal capacity within IER. Whilst this was the first project that Cecile Uwimana, the project lead, had managed, she has not only designed a robust programme but matured with it and its needs. The steering committee of the Bridging the Gap programme should be credited with evolving the design of their programme to include components to strengthen the mentorship stream, balancing the need for gender and diversity, developing M&E tools and a communications strategy.

EAP therefore has no recommendations regarding sustainability. Whilst they will need the funding for 2019 in the second year of their Phase II programme, it is positive to see their plans for the future.



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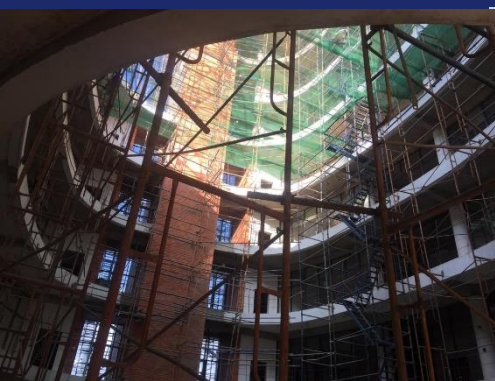
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Key Recommendations

- Support for academic internships in university curricula
- Wrap – up day for mentors and interns to strengthen relationships
- Networking & job platforms
- Technical terms glossary
- Software skills development

“I think that now we need to know many things but we don’t have much time to learn them. Before we came here the supervisor asked us what our expectations were but for some of us we wanted to immediately go to the field to practice, but we have seen that what we learned in the school is different to what is on the field. So first we need to know about what the field is really like, so he gave us materials to use to begin to understand that. There is a gap between what we learned at the school and what is really happening.” - Telecoms Intern 2019



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