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# ICT Transforming Education in Africa

## Final project report

ICT Transforming Education in Africa is a project supported by the UNESCO-Korean Funds-in-Trust (KFIT) contribution by the Republic of Korea with a focus on e-school model development, open and distance learning and ICT policy development. In the first phase of the project from 2016 to 2019, Mozambique, Rwanda and Zimbabwe piloted ICT-based innovative approaches to foster human and social development, expanding access to relevant lifelong learning opportunities and enhancing the quality of learning.

The aim of this progress report is to highlight the main results of the first phase of the project. These include training of over 1,300 teachers on the pedagogical use of ICT, the development of digital resources for teachers and learners, the establishment of policies on ICT in education, and a variety of activities pilot testing the use of ICT to address fundamental challenges faced at K12- and higher education level in the beneficiary countries. The findings in this progress report inform the implementation strategy for the second phase in Côte d'Ivoire, Ghana and Senegal from 2020 to 2023.

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# Executive Summary

The project 'Transforming Education in Africa', implemented from 2015 to 2019 within the framework of the UNESCO-Korean Funds-in-Trust (KFIT) contribution by the Republic of Korea, was successful in achieving its expected results in the areas of e-school model development, open and distance learning (ODL) and ICT policy development across three countries in Africa, namely Mozambique, Rwanda and Zimbabwe.

	<b>Expected result 1:</b> Improve the accessibility and quality of basic education through innovative ICT solutions and support teachers in adopting new pedagogical approaches	<b>Expected result 2:</b> Strengthen capacities of higher education and teacher training institutions in using open and distance learning	<b>Expected result 3:</b> Support the development of national ICT in education policies, including supporting UNESCO's Information for All Programme
<b>Mozambique</b>	E-school model developed 22 schools equipped UNESCO ICT Competency Framework for Teachers localized 'ICT for pedagogy' course and 'Basic ICT Manual' developed 500 teachers trained 263 lesson plans produced EMIS assessment and recommendations produced	27 staff at IEDA trained on multimedia materials production in collaboration with KNOU  150 lecture notes and 150 videos produced by IEDA  81 master trainers and 250 teachers in teacher training colleges trained on pedagogical use of ICT	ICT in Education policy launched IFAP committee established  225 students trained on development of mobile apps
<b>Rwanda</b>	UNESCO ICT Competency Framework for Teachers localized Mapping of ICT initiatives produced Teachers' ICT standards validated 'ICT Essentials' and 'Advanced ICT Essentials' produced 150 teachers trained on pedagogical use of ICT e-assessment platform created 950 assessment items for 7 subjects across primary and secondary education created 70 teachers trained on e-assessment	150 UR staff trained on managing ODL related activities  200 UR lecturers and pre-service teachers trained on ODL  30 lecturers and 30 technicians trained on multimedia materials production by KNOU	M&E framework for teacher training produced  Anti-plagiarism policy, MOOC and OER frameworks for UR produced  UNESCO Guidelines for the inclusion of persons living with disabilities on ODeL integrated in Digital Talent policy  Contextualized Rwanda Knowledge Society Policies Handbook produced
<b>Zimbabwe</b>	UNESCO ICT Competency Framework for Teachers localized 'ICT Essentials' course developed 20 schools equipped 2 special schools equipped 400 teachers trained on pedagogical use of ICT 160 teachers trained on OER Repository with 1,300 entries created	45 teacher educators trained on ODL  160 lecturers from 14 teachers colleges trained on digitization of learning materials and gamification  Model ODL institution established	ICT in Higher Education Policy developed  26 students trained on development of mobile apps IFAP committee established

Table 1: Main results by country and expected result.

In **Mozambique**, an e-school model for basic education was developed and piloted in 22 primary and secondary schools in the 13 provinces of the country. Over 500 teachers and ICT technicians were trained on the pedagogical use of ICT, using the newly developed 'ICT for Pedagogy' course and the 'Basic ICT Manual'. ICT equipment and digital materials based on open educational resources (OER) were made available to the schools. Over 263 lesson plans in digital format were produced, linked to 286 various online educational resources for eight science subjects for primary and secondary education. In the area of ODL, the project strengthened the institutional capacities of the Institute for Open and Distance Learning (IEDA) to shift from the paper-based to blended open and distance learning. The activities focused on the development of teacher training programmes and materials to be used in the pilot e-schools specifically, as well as on the creation of resources for the existing in-service teacher training mechanism that currently allows IEDA to reach about 40,000 teachers a year. Within the framework of a collaboration between UNESCO and the Korea National Open University (KNOU) IEDA staff received training on the production of multimedia materials, management of the Moodle platform and operation of the start-of-the-art multimedia studio provided with the support of the project. Finally, the project supported the development of an ICT in Education policy, officially launched in July 2019, as well as the establishment of a national IFAP committee.

In **Rwanda**, the project focused on strengthening teachers' abilities to integrate ICT in the classroom and use electronic assessment. Specifically, it supported the harmonization of teacher training in the area of ICT by mapping existing training offers, developing frameworks, certification standards and monitoring and evaluation tools. It developed the ICT Essentials and Advanced ICT Essentials courses, based on the localized ICT Competency Framework for Teachers. The training programme benefitted about 150 teachers and laid the foundation for the national level roll-out of the training by KOICA. Also, the project supported the creation of an e-assessment system for public schools, by creating a space for formative e-assessment on the Rwanda Education Board (REB) platform. About 20 REB staff and 70 teachers were trained on e-assessment, resulting in the creation of about 950 assessment items for 7 subjects across primary and secondary education. By the end of the project, more than 2500 students from 59 schools use the materials for formative assessment. The project supported the University of Rwanda (UR), and particularly the College of Education, in expanding access to higher education and teacher training and improve the quality of learning opportunities following the adoption of distance and blended learning approaches. UR staff received training on instructional design, online module development and management, and production of high-quality multimedia materials. Within the framework of a collaboration with KNOU, the project also equipped UR with a video studio. Finally, the project facilitated the development of framework and sub-sectoral policies, such as the OER and MOOC framework for University of Rwanda and the anti-plagiarism policy for UR. It supported the integration of the UNESCO Guidelines for the inclusion of persons living with disabilities on ODeL into the Digital Talent Policy, the publication of the Rwanda Knowledge Society Policy Handbook and the development of a plan for the ICT sector to match industry needs.

In **Zimbabwe**, 20 schools piloted the e-school model designed by a Ministry task team, including two schools catering for learners with special needs. The project supported the equipment of the schools, it facilitated a training programme for over 400 teachers based on the localized UNESCO ICT CFT, as well as the development of a repository of OER with about 1,300 entries. The project supported the creation of a mobile app to host the training programme and make it available to all teachers in Zimbabwe. About 160 teachers attended workshops on the creation and use of OER. The ODL area of the project allowed improving the institutional capacities of several higher education institutions in using technology for teaching and learning, by promoting training programmes, including on gaming and digitization of learning materials, and the development of training materials. A teacher training institute was supported through equipment and capacity development to become a model institution for open and distance learning. The ICT policy for higher education was successfully developed and the national IFAP committee was established. Activities in the framework of the Youth Mobile initiative, equipping young people with ICT skills, also took place.

To facilitate peer learning and exchanges among country teams, the project also facilitated a series of cross-country activities. A workshop for the finalization of the country-level work plans took place in Zimbabwe in May 2016. A study tour focusing on e-school models and open and distance learning was organized in September and October 2016 in the Republic of Korea, with the collaboration of KERIS and KNOU. A cross-country meeting for peer learning and resource sharing took place in Rwanda in January 2018 while the final project meeting gathered the country teams at the UNESCO Headquarters in France in June 2019. With the support of the project, members of the countries' project teams also attended a number of events related to ICT in education, such as the UNESCO Mobile Learning Week (2018 and 2019), the Qingdao Conference on ICT and post-2015 education (2016 and 2017), the Beijing Conference on Artificial Intelligence and Education (2019), the 2nd African Ministerial Forum on ICT Integration in Education and Training (2016), eLearning Africa (2018), among others.

# Background

“ICT Transforming Education in Africa” is a project developed within the framework of the UNESCO-Korean Funds-in-Trust (KFIT) contribution by the Republic of Korea. The project, which ran from 2015 to 2019, supported the integration of ICT-based innovative approaches for education in three countries in Africa, i.e. Mozambique, Rwanda and Zimbabwe. Its overall purpose has been to foster human and social development of the target countries through the use of ICT-based innovative approaches to post-2015 education to expand access to relevant lifelong learning opportunities and enhance the quality of learning.

The project strategic building blocks include (a) individual capacities including enhancement of the capacity of teachers, policy-makers, and school managers; (b) institutional capacities with specific focuses on local key universities, teacher training institutions and schools, etc.; (c) technological capacities of the education sector in leveraging emerging technologies and media to transform the provision and management of education for all; and (d) administrative capacities of national agencies in owning the project and coordinating multi-stakeholder participation. In response to the diversity of local education contexts and the outcomes from need assessments, country-level priorities and project activities are different in each country, although in line with the overall purpose of the project.

The primary and direct beneficiaries of the project are primary and secondary public schools, teacher training and higher education institutions, concerned policy makers, educational administrators and leaders in the target Member States. The ultimate beneficiaries are teachers and students in the target countries.

The total budget of the project provided by the Republic of Korea is US\$6,000,000. As of November 2019, the project achieved a 94% implementation rate. The project officially started in May 2015 but in-country implementation started in early 2016. In-country project activities ended in June 2019 while the project closed in September 2019.



# Overall Performance

The project 'Transforming Education in Africa' was successful in achieving the three main objectives of the project across the three beneficiary countries, namely:

- Improve the accessibility and quality of basic education through innovative ICT solutions and support teachers in adopting new pedagogical approaches.
- Strengthen capacities of higher education and teacher training institutions in using open and distance learning.
- Support the development of national ICT in education policies, including supporting UNESCO's Information for All Programme.

The activities within the objectives are interlinked with aim of pilot testing the use of ICT to address different fundamental challenges faced by the beneficiary countries at K-12 and higher education level. The first objective focuses on basic education while the second one targets teacher training and higher education. The third objective on policy development allows to scale up the learnings from pilot initiatives at the national or institutional level, ensuring that the impact of the intervention is sustained beyond the duration of the project.

Within the overall project framework, each beneficiary country established a sub-set of integrated expected results with accompanying activities, as exemplified in Table 1. This was the result of a comprehensive assessment of the specific needs in each beneficiary country. The assessment ensured that planned activities were aligned to the priorities and needs of each country and that they reinforced national institutions and human resources. Also, the exercise allowed to reinforce national ownership of the project, identify implementing institutions in the countries and inform the country-specific work plans. Additionally, efforts were made to synergize with existing projects and initiatives in the countries.

The approach adopted by the project ensured that the interventions were targeted to the needs of each country and therefore relevant and responsive to the local context. At the same time, the common framework of objectives maintained some level of consistency and commonalities across country, thus ensuring opportunities for peer learning and knowledge sharing.

	Improve the accessibility and quality of basic education through innovative ICT solutions and support teachers in adopting new pedagogical approaches	Strengthen capacities of higher education and teacher training institutions in using open and distance learning	Support the development of national ICT in education policies, including supporting UNESCO's Information for All Programme
<b>Mozambique</b>	Establish an e-school model for basic education that equips learners with 21st century skills  Strengthen the Education Management and Information System (EMIS) to address teachers' absenteeism and increase reliability and readiness of education data	Transform the provision of open and distance learning from paper-based to blended learning	Develop an ICT in education policy and create ecosystems for building knowledge societies
<b>Rwanda</b>	Enhance the capacity of teachers to integrate ICT in the classroom and use electronic assessment	Strengthen the capacity of the University of Rwanda to increase access to higher education through open and distance learning	Facilitate ICT in education policy development and share best practices for building knowledge societies
<b>Zimbabwe</b>	Strengthen ICT integration in basic education and design an e-school model aligned with the national curriculum	Capacitate higher and tertiary education to use diverse methodologies for lifelong learning and open and distance learning	Create an enabling policy environment for the effective use of ICTs in education, including through the development of ICT in education policies

Table 2: Expected results and main activities by beneficiary country.

In **Mozambique**, the project activities were carried out successfully and largely according to the implementation plan.

For what concerns the **first objective**, twenty-two primary and secondary schools piloted the e-school model designed by a Ministry task team. The project provided ICT equipment and supported the training of over 500 teachers in the pedagogical use of ICT. Digital materials, largely based on open educational resources, were collected and made available to the schools.

Efforts were made to strengthen the Education Management and Information System. Following a comprehensive needs assessment of existing systems for collecting education data, a national task team is currently operationalizing the resulting recommendations and creating the conditions for the strengthened system, although the results of this exercise will be seen after the end of the project.

Activities in the framework of the Youth Mobile initiative, equipping young people with ICT skills, also took place.

To complement the activities taking place at school level, as part of the **second objective**, the project strengthened the institutional capacities of the Institute for Open and Distance Learning (IEDA) to shift from the paper-based to blended open and distance learning. The activities focused on the development of teacher training programmes and materials to be used in the pilot e-schools specifically, as well as on the creation of resources for the existing in-service teacher training mechanism that currently allows IEDA to reach about 40,000 teachers a year. Within the framework of a collaboration between UNESCO and the Korea National Open University (KNOU) IEDA staff received training on the production of multimedia materials, management of the Moodle platform and operation of the start-of-the-art multimedia studio provided with the support of the project.

Finally, with respect to the **third objective**, the project supported the development of an ICT in Education policy, officially launched in July 2019, as well as the establishment of a national IFAP committee. The lessons learnt and experiences of the first two components contributed to the establishment of a policy informed by practice and experiences at school and institutional level.

In **Rwanda**, the project activities were carried out successfully and largely according to the implementation plan.

Concerning the **first objective**, the project focused on activities aimed at strengthening teachers' abilities to integrate ICT in the classroom, by supporting the harmonization of teacher training in the area of ICT by developing frameworks, the validation of certification standards and the implementation of two levels of training programmes, namely the ICT Essentials for Teachers and the Advanced ICT Essentials for Teachers (based on the UNESCO ICT Competency Framework for Teachers).

Also, the project supported the creation of an e-assessment system for public schools, by creating a space for formative e-assessment on the Rwanda Education Board (REB) platform, populating it with e-assessment items, training teachers on its use and piloting it in schools.

While the activities above focused on piloting ICT solutions at the school level, the interventions in the **second objective** targeted the University of Rwanda, and particularly the College of Education, in order to expand access to higher education and teacher training and improve the quality of learning opportunities following the adoption of distance and blended learning approaches. UR staff received training on instructional design, online module development and management, and production of high-quality multimedia materials. Within the framework of a collaboration with KNOU, the project also equipped UR with a video studio.

Finally, activities in the **third objective** focused on the development of framework and sub-sectoral policies, based on the lessons learnt and experiences from the first two components. These included the OER and MOOC framework for University of Rwanda and the anti-plagiarism policy for UR. Also, the project supported the integration of the UNESCO Guidelines for the inclusion of persons living with disabilities on ODeL into the Digital Talent Policy, the publication of the Rwanda Knowledge Society Policy Handbook and the development of a plan for the ICT sector to match industry needs.

In **Zimbabwe** the project activities were carried out successfully and largely according to the implementation plan.

With regards to the **first objective**, twenty schools piloted the e-school model designed by a Ministry task team. The project supported the equipment of the schools, with specialized equipment provided to two schools catering for

learners with special needs. It also facilitated a training programme based on the localized UNESCO ICT Competency Framework for Teachers), as well as the development of a repository of Open Educational Resources (OER) currently containing about 1,300 entries.

Activities in the **second objective** allowed to improve the institutional capacities of several higher education institutions in using technology for teaching and learning, by promoting training programmes and the development of training materials. Also, an existing teacher training institute was equipped and supported to be a model institution for open and distance learning.

As for the other countries, the **third objective** ensured that the integration of lessons learnt from the first two objectives into organic policy documents and initiatives. In that respect, the ICT policy for higher education was successfully developed and the national IFAP committee was established. Activities in the framework of the Youth Mobile initiative, equipping young people with ICT skills, also took place.

To facilitate peer learning and exchanges among country teams, a series of **cross-country activities** were also organized. A workshop for the finalization of the country-level work plans took place in Zimbabwe in May 2016. A study tour focusing on e-school models and open and distance learning was organized in September and October 2016 in the Republic of Korea, with the collaboration of KERIS and KNOU. A cross-country meeting for peer learning and resource sharing took place in Rwanda in January 2018 while the final project meeting gathered the country teams at the UNESCO Headquarters in France in June 2019.

With the support of the project, members of the countries' project teams also attended a number of events related to ICT in education, such as the UNESCO Mobile Learning Week (2018 and 2019), the Qingdao Conference on ICT and post-2015 education (2016 and 2017), the Beijing Conference on Artificial Intelligence and Education (2019), the 2nd African Ministerial Forum on ICT Integration in Education and Training (2016), eLearning Africa (2018), among others.



# Gender Equality Approach

The project strongly integrated the UNESCO priorities on Africa and gender equality. The gender equality priority has been an integral part in the initial conceptualization of the project. For the implementation of activities in the three beneficiary countries, there has been an effort to ensure gender balance and promote participation and inclusion of women and girls.

In terms of schools selected for participation, both boys' and girls' schools were included. Gender considerations were regularly included in the selection of beneficiaries of workshops and training programmes. The project highly valued the participation of women policymakers as part of the country project teams and in the framework of the cross-country activities. National contexts had to be taken into account; in Rwanda for instance, there are more male teachers and thus the project tried to include as many female teachers as possible. In Mozambique, the Youth Mobile activities pose a good example where active recruitment measures led to the selection of more female than male students for the courses on computer programming and coding. In Zimbabwe, gender equality was a factor in the procurement procedures for external consultants.

# Describing and Measuring Results

## 4.1 Project establishment

### ▪ Inception meeting and project establishment

The Republic of Korea indicated that the three target countries of the project should be Mozambique, Rwanda, and Zimbabwe. The UNESCO HQ team organized an inception meeting for the project on 22-23 October 2015 in Paris with the aim of establishing a systematic coordination mechanism for project implementation and discuss and prepare an initial project roadmap, starting from a concrete work plan of the needs assessment phase. A Directors' meeting followed, establishing the implementation modality for the project at the level of UNESCO.

To ensure country ownership and sustainability of project activities, the coordination mechanism includes the establishment of country project teams to be composed of a focal point at the respective Ministry of Education and team members from Ministry directorates or main implementing institutions in the countries.

### ▪ Needs' assessment in the three target countries

To support the country project teams and field offices to assess the local context and analyse their needs to harness the potential of ICT for education, a needs' assessment exercise was undertaken in the three beneficiary countries, with different modalities. The needs assessment allowed to reinforce national ownership of the project and identify implementing institutions in the countries. In this respect, the strategy to establish country teams responsible for steering project activities is a means to ensure country ownership and institutionalization of the project.

The needs' assessment informed the country-level work plans, ensuring that activities are aligned to the priorities and needs of each country and that they reinforce national institutions and human resources. Additionally, efforts were made to synergise with existing projects and initiatives in the countries. In Mozambique and Zimbabwe, the needs assessment phase was led by the HQ team and saw two back-to-back mission taking place from 22 to 30 March 2016 in Maputo and Harare. In Rwanda, the needs' assessment mission was undertaken by the Nairobi field office colleagues, while the HQ team contributed to the drafting and finalization of the report.

In Annex 2\* is a description of the process and outcomes of the needs' assessment phase in each target country.

### ▪ Finalization of the country project documents, following a regional workshop organized by UNESCO HQ in Zimbabwe

The needs' assessment reports formed the basis for the development of country-specific project documents and work plans. To ensure country ownership of the project and alignment to national needs and strategies, UNESCO HQ organized a regional workshop in Harare, Zimbabwe, on 16-18 May 2016, to finalize the country-level project documents and work plans. Participants included the project core team members from Mozambique and Zimbabwe (while Rwandese participants were not able to travel), UNESCO programme specialists from HQ and field offices, and experts from key Korean institutions, such as Korea National Open University (KNOU), Korea Education Research Information Service (KERIS) and Chuncheon National University of Education. All participants worked collaboratively to agree on the main expected results per project component and plan the in-country activities for the following three years accordingly.

\* Annexes available upon request.

The subdivision of expected results per country can be found below:

Mozambique	
<b>E-schools and teacher training</b>	Expected Result 1: Learners' competences in 21st century skills aligned with the new curriculum for primary and secondary schools have been acquired. Expected Result 2: Information on management administration (teachers and head masters' absenteeism and student record) is readily available on-line and communication between local community and schools is enhanced, through strengthening of the ICT-enhanced EMIS.
<b>ODL</b>	Expected Result 3: The provision of ODL transform from paper based methodology to blended learning models.
<b>ICT Policy Development</b>	Expected Result 4: Improvement of ICT policy in Education has allowed creation of ecosystem that enables knowledge societies and alignment with SDGs.

Table 3: Components and expected results in Mozambique

Rwanda	
<b>E-schools and teacher training</b>	Expected Result 1: The capacity of pre- and in-service primary and secondary teachers to provide quality education is enhanced, through improving their skills to integrate ICT in education, and using electronic assessments.
<b>ODL</b>	Expected Result 2: The capacity of the University of Rwanda in expanding higher education is strengthened through offering courses via ODeL.
<b>ICT Policy Development</b>	Expected Result 3: Policy development and knowledge sharing for knowledge societies are facilitated.

Table 4: Components and expected results in Rwanda

Zimbabwe	
<b>E-schools and teacher training</b>	Expected Result 1: The e-School models in Primary and Secondary Education developed and tested in conformity with the new curriculum and the global trends Expected Result 2: Capabilities of administrators and teachers in pedagogical use of ICTs improved in conformity with the new curriculum.
<b>ODL</b>	Expected Result 3: Institutional capacities of Teacher Education Colleges, Zimbabwe Open University, Bindura University of Science Education, and University of Zimbabwe improved in using diverse ICT-based methodologies for lifelong learning and serve as model universities and colleges.
<b>ICT Policy Development</b>	Expected Result 4: Zimbabwe ICT in Education Sector Policy and the associated sector-wide ICT in education master plans developed and submitted for endorsement. Expected result 5: Institutional Operation Guidelines developed to support the scaling up of the e-School model and ICT-based methodologies.

Table 5: Components and expected results in Zimbabwe

## 4.2 Project implementation in Mozambique

In Mozambique, twenty-two primary and secondary schools piloted the e-school model designed by a Ministry task team. The model aimed to leverage the potential of ICT to improve the quality of teaching and learning opportunities at primary and secondary level. The project provided ICT equipment and supported the training of over 500 teachers in the pedagogical use of ICT. Digital materials, largely based on open educational resources, were collected and made available to the schools.

Efforts were made to strengthen the Education Management and Information System, based on the need to provide timely and updated education-related data and reduce students' and teachers' absenteeism. Following a comprehensive needs assessment of existing systems for collecting education data, a national task team is currently operationalizing the resulting recommendations and creating the conditions for the strengthened system, although the results of this exercise will be seen after the end of the project.

Activities in the framework of the Youth Mobile initiative, equipping young people with ICT skills, also took place.

The project strengthened the institutional capacities of the Institute for Open and Distance Learning (IEDA) to shift from the paper-based to blended open and distance learning. For IEDA, the adoption of innovative mechanisms for ODL is a necessity for the efficient and cost-effective provision of their courses, which currently cater for about 40,000 in-service teachers a year. Within the framework of a collaboration between UNESCO and the Korea National Open University (KNOU) IEDA staff received training on the production of multimedia materials, management of the Moodle platform and operation of the start-of-the-art multimedia studio provided with the support of the project.

Finally, the project successfully supported the development of an ICT in Education policy, which was officially launched in July 2019, as well as the establishment of a national IFAP committee.

Further details about the individual activities and results can be found in the sub-sections below.

### ▪ Establishment of the e-school model

In Mozambique, the project aimed to establish an e-school model that provided an ICT-enhanced learning environment, with a particular focus on equipping teachers and school practitioners with the skills and tools to leverage ICTs to improve teaching and learning practices at school level.

The project needs assessment found that schools had poor infrastructure and teachers had very low ICT skills, particularly in primary schools. National stakeholders in Mozambique, including Ministry of Education and Human Development (MINEDH) directorates, the Institute for Open and Distance Education (IEDA), and the Institute for Education Development (INDE), agreed on the main lines of intervention for the e-school model in Mozambique in the course of a workshop that took place in Maputo in December 2016.



Figure 1: Pupils in pilot e-schools engage with ICT equipment provided by the project (©MINEDH)

The resulting e-school model document requires that equipment would be used for teaching and learning as part of subject-based classes. To supply for the low quality and availability of teaching and learning materials and aids, the model envisaged the development and collection of high-quality digital materials. Finally, the development of a training programme to respond to the low ICT skills of teachers was foreseen.

In terms of learning environment, the project provided twenty-two primary and secondary pilot schools in the eleven provinces of Mozambique with ICT equipment to allow the testing of the e-school model. Specifically, each primary school received eight laptops and four LCD projectors, while for secondary schools the equipment included thirteen laptops and five projectors. MINEDH through *Movitel* corporate social responsibility, installed optical fiber in the 22 pilot schools to ensure internet connectivity.

### ▪ Development of training materials for the pedagogical use of ICT

The development of training materials has been a key component of the e-school model. In that regard, the project has supported the development of two main outputs: the basic manual of ICT for teachers and the ICT for pedagogy course, based on the newly-developed localized ICT Competency Framework for Teachers.

In September 2018, the task team composed of specialists from the Ministry of Education and Human Development, INDE and IEDA, with the support of UNESCO, finalized the manual titled '*Tecnologias de Informação e Comunicação para o Ensino*' (Information and Communication Technologies for Teaching).

The manual consists of seven units, namely 1) Information and communication technologies; 2) Text processing (Microsoft Word); 3) Spreadsheets (Microsoft Excel); 4) Presentations (Microsoft Power Point); 5) Drawing tools (Paint); 6) Production of videos (Movie Maker); and 7) Internet and e-mail. The Manual is meant to introduce teachers to the use of ICT to support teaching and learning and serves as an introduction to the 'ICT for pedagogy' course developed



Figure 2: Cover page of the basic manual of ICT for teachers (©MINEDH)

on the basis of the UNESCO ICT Competency Framework for Teachers (CFT). This manual is now available on the MINEDH platform and was distributed in hard and soft copies for wider dissemination.

A localized ICT Competency Framework for Teachers has been developed and approved by national stakeholders. A course based on the ICT Framework, called 'TIC na Pedagogia' (ICT for Pedagogy), has been designed in consultation with IEDA and the Ministry of Education and Human Development, constructed from Open Educational Resources and translated into Portuguese. Twenty-six units of study have been developed, often through adaptation from existing Open Educational Resources (OER), and uploaded to the IEDA Moodle platform. IEDA developed 11 new video inserts to supplement the course materials and further provide a Mozambique perspective to the study units.

As IEDA staff conducted the actual teacher training in the e-schools, they also received specific training on how to facilitate the face-to-face part of the ICT for Pedagogy course and were equipped with the technical knowhow to navigate the learning management system used to deliver the online component. Finally, the 24 staff prepared a video introduction and an audio summary for each unit.

### ■ Implementation of the ICT for pedagogy training programme in the e-schools

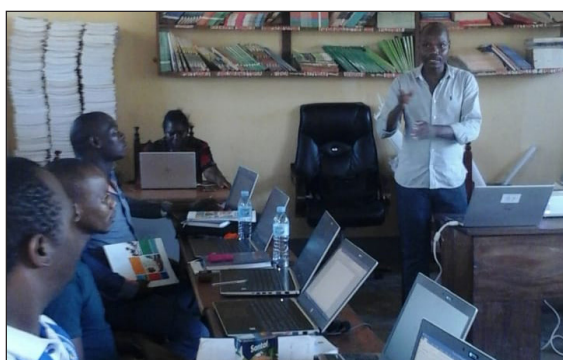


Figure 3: Teachers from the pilot e-schools use the UNESCO-provided laptops and the Basic ICT Manual to follow the training (©UNESCO)

About 500 teachers in the pilot e-schools received face-to-face in-service training on the pedagogical use of ICT, using the 'Information and Communication Technologies for Teaching' manual and the 'ICT for pedagogy' course as training materials.

The first phase of face-to-face in-service teacher trainings on the pedagogical use of ICT was conducted in February and March 2019 in 16 schools in eight provinces of the country, benefitting 400 teachers (192 in primary schools, 208 in secondary schools, 128 women) and 16 ICT provincial technicians. The second phase of training took place in May 2019, benefitting a total of 126 teachers (48 primary school teachers and 78 secondary school teachers) and 6 ICT provincial technicians. The delay in the second training was

due to natural disasters (two cyclones) and political instability in the Northern provinces of the country.

The first week of the onsite training focused on basic ICT concepts such as how to operate a computer and how to use the Office suite. The second week of training focused on the orientation of the ICT for pedagogy course based on the localized UNESCO ICT Competency Framework for Teachers (ICT-CFT). Teachers completed the online part of the training in June 2019.

### ■ Implementation of the ICT for pedagogy training programme in the e-schools



Figure 4. Champion teachers engage in discussions to prepare the lesson plans for the e-schools (©UNESCO)

The project supported the selection of digital resources for use in the e-schools in a number of subjects: natural science, social science, English and Portuguese for primary education level; mathematics, biology, chemistry and physics for secondary education level. Under the guidance of UNESCO, 24 'champion teachers' searched available OER and platforms, found suitable materials for the target subjects and adapted and collected them while ensuring their adherence to the national curriculum and the Mozambican context.



A total of 263 lesson plans were produced, linked to more than 286 educational resources such as video lessons, video experiments, etc. Following validation by the Ministry of Education and Human Development, the materials have been made available on the Ministry web platform. An offline version has been distributed to the 22 pilot e-schools through USB keys and CDs, to allow for use of the materials without an internet connection.

### ▪ Improving the Education Management and Information System (EMIS)

The broad needs assessment undertaken in the framework of the UNESCO KFIT project found that the current EMIS platform and its functionalities need substantial improvements to ensure that policymakers and education practitioners can have access to appropriate and disaggregated information in a timely and efficient manner. Expected result number 2 calls for information on management administration to be readily available online and for communication between local communities and schools to be enhanced, through the strengthening of the ICT-enhanced EMIS.

In September 2018, a stakeholders' meeting took place at the Ministry of Education and Human Development in Maputo. The current systems and platforms used for the collection and dissemination of education data were presented. The country team agreed on the need to conduct a comprehensive review of the existing systems, identifying the data gaps for monitoring the education sector strategic plan, the achievement of SDG4 and the monitoring of the implementation of the newly-developed ICT in education policy.

Statistical and technical needs' assessment reports on the current system were produced. A one-day workshop in February 2019 allowed to review the recommendations and set up an EMIS steering committee composed of heads of departments from all MINEDH stakeholders to support the reform of the EMIS.

The recommendations for the improvement of the EMIS include the following items:

- A harmonized data set, data structure, sources and data formats are required to improve education statistical system;
- A clear roadmap of the measures should be provided to overcome detected duplications;
- Processes should be simplified and include new data needs and indicators as recommended by the National Strategy for Development of Education Statistics (NSDES);
- There is need to align the collection of educational data to SDG4 / CESA 16-25 and the requirements to monitor the indicators of the newly developed ICT Policy in Education;
- The EMIS platforms should allow access through multiple devices including mobile devices;
- The EMIS architecture should be strengthened at different levels (from national to provincial to district-level);
- The capacities of Ministry of Education and Human Development staff to operate the EMIS should be strengthened.

The strengthened EMIS was not piloted in the schools as originally foreseen in the work plan, due to various delays. However, the finalization of the EMIS needs assessment reports and the adoption of the resulting recommendations by a newly set up Ministerial task team created the conditions for the improvement of the EMIS.

### ▪ Teacher training enhanced by ODL and blended learning

The project supported IEDA to adopt blended learning models to complement established paper-based methodologies for in-service teacher training. With the aim of strengthening institutional capacities, UNESCO provided state-of-the-art equipment and software to allow for the production of multimedia teaching and learning materials, including videos, and established an implementing partnership agreement with the Korea National Open University (KNOU) to improve the skills of IEDA staff.

In 2017 and 2018, KNOU conducted two on-site training sessions on the various stages of development of video lectures, followed by distance support. Local experts also supported IEDA with the finalization of the materials. The training programme focused on the following areas:

- a. production of multimedia contents demanding all phases of production: instruction design, instructional development, diagramming, illustration, sound image capture, editing up to the final product



Figure 5: Training on ICT-enhanced open and distance learning for IEDA facilitated by KNOU (©UNESCO)

- a. production of videos for the online courses, including video shooting, digital editing, video effects, web animation, scripting, etc.
- b. use of the learning management platform for content delivery (installation, administration, monitoring)
- c. pedagogical use of ICT

By the end of the project, IEDA produced 150 lecture notes (39 for mathematics, 37 each for the other three subjects – natural science, social science and Portuguese) and 150 videos of 25 minutes each, based on the lecture notes. Such materials are to be uploaded onto the IEDA platform and will be available to primary education level teachers all over the country.

#### ▪ Provision of equipment and support to teacher training institutions



Figure 6: TTI Monapo receives ICT basic equipment and training on use of the equipment (©UNESCO)

The project facilitated the institutional capacities of the public Teacher Training Institutes (IFPs) in Mozambique to deliver training on the pedagogical use of ICT.

Firstly, the project provided basic ICT equipment to three Institutes, thus ensuring that all IFPs have the basic pre-conditions to ensure that course on the pedagogical use of ICT can be imparted.

Secondly, the National Directorate of Teachers' Colleges (NDFP) and the project trained a total of 250 IFP staff on the integration of ICT in education, through a five-day workshop in May 2019. The course was based on the two

materials produced by the project, namely the 'Information and Communication Technologies for Teaching' manual and the 'ICT for pedagogy' course. As a result, the IFP staff will cascade the integration of ICT pedagogy course to about 8,000 student teachers per year.

#### ▪ Development of the sector-wide ICT in Education policy and masterplan



The project supported the development of a new Mozambique ICT in Education Policy and Master Plan. A national technical team consisting of all relevant national stakeholders was set up in 2017 and engaged in a series of drafting workshop. Following such participatory process, the national team proposed six main pillars for the policy, as follows:

- a. The need for a safe and school-based learning environment;
- b. Open Education Resources and digital contents accessible to anyone, anywhere, anytime;

Figure 7: Cover page of the Mozambique ICT in Education Policy (©MINEDH)

- a. Teacher training and capacity building of education leaders;
- b. Improving students' digital skills and innovative and creative practices in schools; and
- c. Education management information system.

The team also elaborated indicators, activities and budgetary requirements needed to fully implement the policy recommendations. The Minister of Education and Human Development officially launched the ICT in Education Policy and Master Plan on 5 July 2019.

### ▪ Establishment of the national IFAP committee in Mozambique

UNESCO and the Mozambique National Commission for UNESCO supported the official launch of the Information for All Programme (IFAP) National Committee for Mozambique. High-level government officials, representatives from the private and public sector, academics and other civil society organizations attended the two-day event in Maputo in November 2018.

After the launching ceremony, 30 IFAP committee members representing the Ministry of Justice and Legal Affairs, the public and private sector and civil society organizations, participated in various training sessions on IFAP, its 6 priorities and the work of the IFAP National Committee. The IFAP National Committee Members also agreed to focus on three priority areas in the strategic plan, namely Information Literacy, Information Preservation and Information Ethics. The recommendations from the workshop will enrich the implementation plan for the IFAP National Committee for Mozambique and will be presented to the Minister of Education and Human Development.



Figure 8: Group picture of the official launch of the IFAP National Committee for Mozambique (©UNESCO)

### ▪ Launch of the YouthMobile initiative in Mozambique

The project supported Mozambique in joining a growing number of countries that engage in the UNESCO YouthMobile Initiative to train young people to programme and use mobile phones as a resource to solve local problems, pursue sustainable development and increase employment opportunities.

The launch event of the YouthMobile Initiative in Mozambique took place at the Maluana National Science and Technology Park in Maluana, Maputo Province, south of Mozambique, in September 2018. The event was followed by a series of seminars and trainings on 'Empowering the next generation'.

The events engaged more than 225 students (of which 45% were girls) between grade 10 and 12 and focused on promoting entrepreneurship as the key to ensuring sustainable development and tackling unemployment. The participating youth attended lectures on creativity in business through ICTs and self-sustaining informal entrepreneurship. Students also worked in teams on projects that resembled a real work-scenario. During the final day, each group had the opportunity to pitch their idea to a panel of potential business supporters. In the upcoming months, the students will continue to receive support from the facilitators and assistants for the creation of local applications to solve specific local problems.



Figure 9: Students from the Manhica and Marracuene districts



Figure 10: Children attending the training of the Africa Code Week (©UNESCO)

In October 2018, 157 children aged 12 to 17 (of which 88 girls) from Manhica district participated in a digital programming event called **Africa Code Week**. The training took place at Maluana Science and Technology Park.



### 4.3 Project implementation in Rwanda

In Rwanda, the project responded to the need to harmonize teacher training in the area of ICT. It strengthened teachers' abilities to integrate ICT in the classroom, by supporting the development of frameworks, the validation of certification standards and the piloting of training programmes such as the ICT Essentials for Teachers and the Advanced ICT Essentials for Teachers (based on the UNESCO ICT Competency Framework for Teachers). It is foreseen that after the pilot, KOICA will scale up the training on the pedagogical use of ICT to all teachers across the country.

Also, in response to the call of the Rwandan ICT in Education policy, an e-assessment system for public schools was established, by creating a space for formative e-assessment on the Rwanda Education Board (REB) platform, populating it with e-assessment items and piloting its use with teachers.

The University of Rwanda, and particularly the College of Education, strengthened their capacity to adopt distance and blended learning approaches to reach a wider number of students. UR staff received training on instructional design, online module development and management, and production of high-quality multimedia materials. Within the framework of a collaboration with KNOU, the project also equipped UR with a video studio.

In the area of ICT policy development, activities focused on the development of sub-sectoral policies and frameworks for the University of Rwanda, such as the OER and MOOC framework for UR, the anti-plagiarism policy for UR. Also, the project supported the integration of the UNESCO Guidelines for the inclusion of persons living with disabilities on ODeL into the Digital Talent Policy, the publication of the Rwanda Knowledge Society Policy Handbook and the development of a plan for the ICT sector to match industry needs.

Further details about the individual activities and results can be found in the sub-sections below.

- **Harmonization of teacher training initiatives and development of certification standards and piloting of ICT Essentials for Teachers**

The needs assessment that preceded the completion of the work plan for Rwanda found a variety of scattered and un-harmonized teacher training initiatives in the area of ICT in Education. Following a mapping exercise of all programmes training teachers on ICT, the project supported the development of the UNESCO-Rwandan ICT Essentials for Teachers (ICT Essentials).

The UNESCO-Rwandan ICT Essentials localize the UNESCO ICT Competency Framework for Teachers (ICT-CFT) and focus on the 'Technology Literacy' phase. A training programme composed of 14 units was developed to achieve the following outcomes:

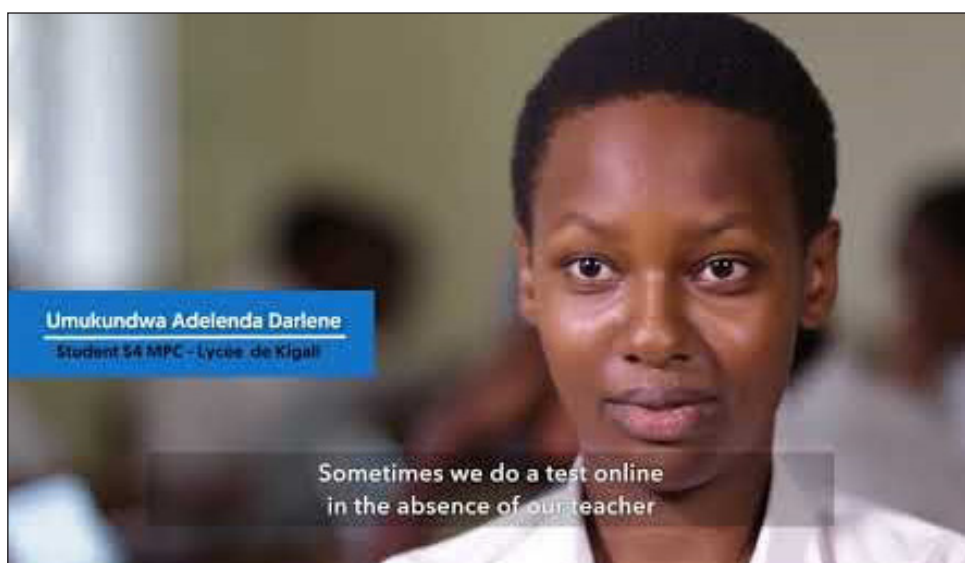


Figure 11: Video of ICT Essentials for Teachers. Link here: [https://www.youtube.com/watch?v=5N5tgj\\_x-TQ](https://www.youtube.com/watch?v=5N5tgj_x-TQ)

- Outcome 1: have good basic ICT skills (Office suite, learning management system and internet environments)
- Outcome 2: be able to integrate ICT into teaching and learning, school administration and use ICT for continuous professional development
- Outcome 3: use ICT skills to attain curriculum learning objectives
- Outcome 4: use ICT to access learning resources and promote research
- Outcome 5: use technology-based learning project and problem solving learning skills
- Outcome 6: be ICT literate and use ICT pedagogy in teaching and learning for promoting creativity and innovation.

The training programme consists of a blended learning course, with five days (42 hours) face-to-face training and a further 40 hours are conducted online for a total of 82 notional hours. During the face-to-face training, teachers are exposed to the content and tools on the learning management system (LMS), and have an opportunity to work through some of the course content (units 1–6) with a mentor. The UNESCO-Rwanda ICT Essentials for Teachers course material is composed of local course material and international Open Educational Resources (OER).

During the duration of the project, the ICT Essentials for Teachers course was piloted twice. The first pilot took place from November 2016 to March 2017, involving 11 facilitators and 30 teachers. A follow-up evaluation revealed that the majority of the teachers did use the skills learnt in the training in their teaching practice. After the pilot, a review of the course was conducted with 23 representatives from the REB, University of Rwanda, Teacher Training Colleges, and KOICA etc. A revised ICT Essentials for Teachers course was produced and used for a second pilot of the course targeting 120 teachers from December 2017 to February 2018. All 30 districts in Rwanda piloted the ICT Essentials.

It is expected that the piloting of the training, together with the results of the monitoring and evaluation activities, informs the subsequent scale up of the ICT Essentials for Teachers course to the whole country supported by the Korea International Cooperation Agency (KOICA).

#### ▪ Development of Advanced ICT Essentials for Teachers

Upon the request of the country team, the project also facilitated the development of an Advanced ICT Essentials Training course, which represents a progression to a more advanced stage of integration compared to the ICT Essentials for Teachers course launched in 2016.

The new course focuses on Knowledge Deepening and Knowledge Creation levels of the UNESCO ICT Competency Framework for Teachers (CFT). The course materials are developed from contextualised open educational resources (OER), whenever possible, and include multimedia elements to enhance text and video materials used in the original version of the course, as requested by teachers and officials at REB.



Figure 12: Stakeholders validate the Advanced ICT Essentials for Teachers (©UNESCO)

The training programme on the Advanced ICT Essentials for Teachers adopts a blended learning modality, with four of the 11 units meant to be delivered face-to-face, and the rest online. Below are the titles of the units of study:

- Use of the interactive whiteboard to support teaching and learning
- Use of assistive technology for inclusive and special needs education
- Use of the Technological Pedagogical Content Knowledge (TPACK) Framework Project learning in TPACK
- How to incorporate games into lessons
- Use of mobile devices to support teaching and learning
- Use of multimedia application and simulations
- Motivation for learners and learning modalities
- How to create learner-centric lessons
- How to design a 'Flipped Classroom' (pervasive education)
- How to create an online learning environment (Google Classroom & Moodle Cloud)
- How to facilitate online learning



## ▪ Development of a Monitoring and Evaluation Framework and Certification Standards

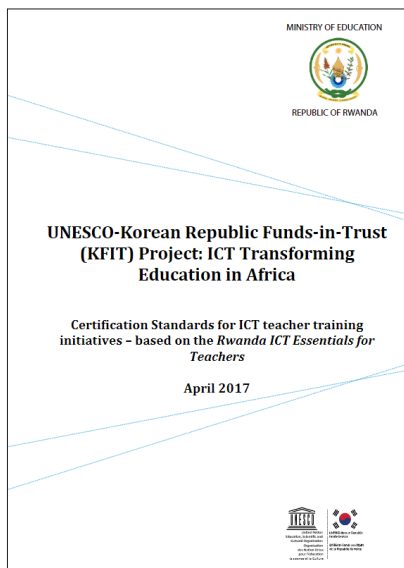


Figure 13: Cover page of the Certification Standards for ICT Teacher training initiatives in Rwanda (©UNESCO)

The project supported the development of Certification Standards for ICT teacher training initiatives and of a Monitoring & Evaluation (M&E) Framework based on the Rwanda ICT Essentials for Teachers.

The Standards aim to ensure that the outcomes of the training initiatives are aligned with the ICT Essentials and help to clarify minimum expectations for in-service and pre-service ICT teacher training programmes in Rwanda. They also provide a framework to support professional development and certification both for pre-service and in-service teachers; recruitment practices; monitoring, evaluation and performance management; and reflection and self-evaluation. These standards may also inform policy improvement in order to create an environment conducive to the implementation of ICT Essentials for Teachers towards enabling students to use ICT in order to learn more effectively (Technology Literacy) and enabling students to acquire in-depth knowledge of their school subjects and apply it to complex, real-world problems (Knowledge Deepening).

An M&E Framework based on the UNESCO-Rwandan ICT Essentials for Teachers has been developed to support the government and the training providers to effectively monitor their ICT teacher training initiatives.

Such framework has been used to evaluate the two pilot programmes implemented during the duration of the project. Specifically, the evaluation looked at the extent to which teachers use the skills that they learnt during the training in their teaching and learning practices. The analysis of data found that teachers were keen to exercise the skills, but need support from an enabling environment.

## ▪ Creation of an e-assessment system for Rwanda

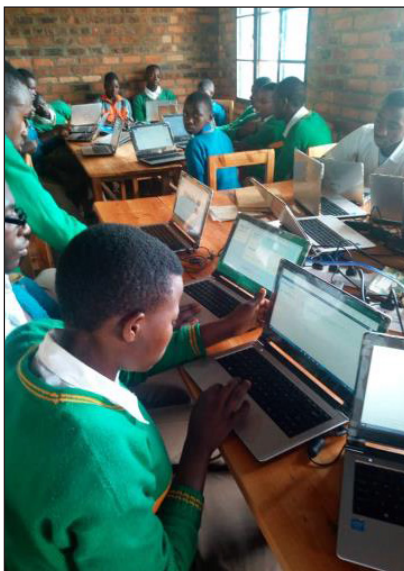


Figure 14: Students at G.S. Shangasha try the quizzes (©UNESCO)

E-assessment is the second major area of intervention in the framework of expected result number 1 in Rwanda. Policy documents such as the ICT in Education Master Plan 2015-2020 state that Rwanda should move from paper-based assessments to e-based assessments. The project facilitated the creation of an e-assessment space on the REB platform and the creation of over 950 e-assessment items.

In 2017, the project facilitated a comprehensive readiness assessment with the aim of scoping the possibilities for the use of ICT in assessment in Rwanda. The readiness assessment led the country team to a well-informed understanding of the real needs and the existing resources, and provided the base for the piloting of transformation of paper-based assessments to e-assessments at primary and secondary level. Based on the findings of this exercise, it was decided to focus on formative assessment on three subjects in primary education for grade 5 (Mathematics, Elementary Science and Technology, English Language) and three subject in secondary education for grades 2 (Biology, Chemistry, Geography). Also, a specific group to oversee the development of formative assessment and e-assessment was set up within REB, including experts from the departments of Assessment, Curriculum, Teacher Development and ICT.

In order to make the best use of the existing infrastructure, the platform for e-assessment has been integrated into the existing REB platform. The institutional capacities of REB staff to manage and use the functionalities for e-assessment were strengthened through a series of workshops in 2018. Subsequent training workshops focused on equipping teachers both REB staff and a select number of teachers with the skills to create assessment items, manage them in the platform and use them in the classroom.

The first round of item creation led to the development of 300 questions items that were piloted in 10 Rwandan schools in 2018. Following the success of the first pilot, an expansion of the e-assessment system was undertaken, leading to a total of 950 (and still growing) high-quality assessment items created and made available on the REB platform, and the inclusion of a new age group (Senior 4). Based on the lessons learnt from the first pilot, the expansion aimed at developing coherent tests rather than individual items and adequate attention was given to assessing higher-order competences, in line with the Competence-Based Curriculum.

Following the quality assurance mechanism that validated the new items, the project supported a second pilot of the e-assessment system, with the expectation that trained teachers support their peers in their schools and other schools to work with e-assessment. By the end of the project, 70 teachers (from 59 schools) and REB staff have received training on e-assessment.

Finally, in order to expand the impact of the training sessions to a wider public, the project supported the development of a self-learning course on the REB platform consisting of a mixture of documents, PowerPoint presentations, quizzes and activities. . The course, which can be accessed online at <https://elearning.reb.rw/course/view.php?id=224>, includes five sessions as follows:

- Session 1 - Formative assessment & basic Moodle knowledge
- Session 2 - Question writing for the Rwandan Curriculum & writing closed questions on the Moodle
- Session 3 - Question quality principles & how to write open questions
- Session 4 - Test construction and quality assurance
- Session 5 - Using outcomes formatively

All the materials produced in the framework of this activity are available to all teachers on the REB platform. Currently, more than 2500 students from 59 schools use the materials for formative assessment.

#### ▪ Strengthening of capacities of UR staff in using ODeL for teaching and development of ODeL teaching and learning materials

The project supported UR to ensure that its human resources are adequately trained and supported to sustain the enhanced use of ODL. The project organized trainings for over 100 staff from 3 Colleges of the University of Rwanda on the management of ODeL and on the production and usage of ODeL teaching and learning materials. As a result, 102 modules were developed. Twenty-six UR academic staff were trained in instructional design and 18 IT technicians and eLearning officers were trained in Moodle programming and administration.



Figure 15: Capacity building of the University of Rwanda Staff on Moodle customization and programming (©UNESCO)

#### ▪ Training staff at the University of Rwanda in the production of multimedia teaching and learning materials

Following the experience of Mozambique, the project supported a second implementation partnership agreement with KNOU to provide UR with the institutional capacities to expand their ODL offering through the making and operating of multimedia contents for educational purposes.

The partnership with KNOU included two face-to-face training workshops in Rwanda. The first workshop targeted about 30 lecturers and focused on general principles of distance learning and the production of lecture notes. The second session, instead, involved about 60 participants, including technicians and e-learning officers would be operating the state-of-the-art studio for the production of multimedia materials, which was provided with the support



Figure 16: UR trainees working on the production of lecture notes with the support of the KNOU consultant (©UNESCO)

of the project.

Finally, the partnership with KNOU included distance consulting and mentoring between the two workshops, and an in-studio training for e-learning officers in November 2018 at the campus of KNOU in Seoul, Republic of Korea.

#### ▪ **Development of policies for Teacher Training Colleges and University of Rwanda**

UNESCO has supported Rwanda to develop the MOOC and OER for Higher Education Framework, and the Anti-Plagiarism Policy for the University of Rwanda. These documents complemented the National ODeL Policy, which has the mission to provide access to educational opportunities by offering high quality, innovative, responsive and affordable educational programmes through ODeL.

The project supported the assessment of readiness of learners to take up innovative learning practices. In order to collect on the information reading and seeking culture of UR students, a training on the Media and Information Literacy (MIL) Assessment was carried out. The contextualized MIL for Rwanda allowed to collect data from the 16 Teacher Training Colleges of UR and produce an assessment report. In parallel, an infrastructure needs assessment of the 16 Teacher Training Colleges (TTC) was conducted.

#### ▪ **Supporting learners with disabilities**

Making education and information accessible for persons living with disabilities is a goal in many Rwandan official documents, even though existing ODeL policies do not include specific provisions for this matter. With the support of UNESCO KFIT and the European Agency for Special Needs Education, the UNESCO Guidelines for the inclusion of persons living with disabilities on ODeL have been integrated into the Digital Talent Policy (DTP) of the Ministry of Information and Communication Technology (MITEC). UNESCO also supported the National Council of Persons with Disabilities (NCPD) and MITEC to develop a work plan with suggested activities to implement the DTP, which has been validated. In addition, the UNESCO Guidelines for the Inclusion of Persons Living with Disabilities on ODeL was also presented to the UR, which was received as a useful resources for guiding the UR in providing quality education for learners with disabilities.

#### ▪ **Policy development and Establishment and Information for All Programme (IFAP)**

The KFIT project promoted the establishment of an ICT for Education Working Group in Rwanda (ICT4E) composed of representatives from relevant Ministries and development partners. The ICT4E meets every quarter to discuss all ICT in education issues in the country. The project also supported the sharing of best practices on ICT integration, through the publishing of case studies and articles.

The role of the IFAP national committee was mainstreamed into the existing ICT Steering Committee of the MITEC.

To support Rwanda to become a knowledge society, 20 policymakers and education officials were trained on the contextualized Rwanda Knowledge Society Policies Handbook during a workshop that took place in May 2017. Responding to the request of the ministry, an additional 17 ministerial staff were also trained in March 2018 in a re-run of the workshop. In addition, KFIT Rwanda also supported the policy engagement in the YouthConnekt Africa Summit 2017 in Kigali, July 2017, which decided ways of connecting hub managers and innovators across Africa and strategies to inform them about policy issues, empowering them to engage in conversations with leaders. A short video was also produced and published on YouTube.

Responding to the request of the MITEC, UNESCO supported the Ministry in developing a Study on matching ICT Skills with industry needs. The purpose of the study is to understand the problem and seek to find solution for the mismatch between graduate's ICT skills and the needs of the ICT sector in Rwanda.



## 4.4 Project implementation in Zimbabwe

In Zimbabwe, twenty schools piloted the e-school model designed by a Ministry task team. The project supported the equipment of the schools and, in view to pilot ICT solutions for inclusion, it provided specialized equipment to two schools catering for learners with special needs. It also facilitated a training programme based on the localized UNESCO ICT Competency Framework for Teachers), as well as the development of a repository of Open Educational Resources (OER) currently containing about 1,300 entries.

In order to expand access to higher education and quality of learning opportunities, the project improved the institutional capacities of several higher education institutions in using technology for teaching and learning, by promoting training programmes and the development of training materials. Also, an existing teacher training institute was equipped and supported to be a model institution for open and distance learning.

Finally, the ICT policy for higher education was successfully developed and the national IFAP committee was established. Activities in the framework of the YouthMobile initiative, equipping young people with ICT skills, also took place.

Further details about the individual activities and results can be found in the sub-sections below.

### ▪ Conceptualization of e-school model for Zimbabwe

The Ministry of Primary and Secondary Education led the conceptualization of the e-school model pilot in Zimbabwe. The conceptualized e-school model is based on four pillars: infrastructure (availability of ICT tools), electronic resources (emphasis on Open Education Resources), capacity building (developing capacities of teachers), and sustainability (monitoring, evaluation accountability and learning for successful implementation of educational technology projects).

Concerning the technical infrastructure, 20 schools across the country, including two special needs schools, were equipped with mobile eClassrooms, consisting of an interconnection of laptops using wireless technologies. Although the provision of the equipment is at classroom level, a mobile cart allows for easy transportation of the devices within the school.

The configuration for primary schools is the following: 20 laptops (for the students) at an average ratio of 2 students per 1 laptop, one laptop (for the tutor) with class management software, one wireless router, one mobile laptop cart used for safekeeping, transportation and charging of the laptops, one overhead projector and one projector screen.

The configuration for primary schools is the following: 15 laptops (for the students) at an average ratio of 3 student per 1 laptop, one laptop (for the tutor) with class management software, one wireless router, and one mobile laptop cart used for safekeeping, transportation and charging of the laptops

The e-school model document for Zimbabwe also clarifies that the use of equipment should be prioritized in the classes that are implementing the new curriculum, i.e. ECD, Grade 1 and 3 in primary schools, and Forms 1, 3 and 5 in secondary schools.



Figure 17: The Ambassador of the Republic of Korea to Zimbabwe and the Minister of Primary and Secondary Education observe students using the newly delivered laptops (©UNESCO)

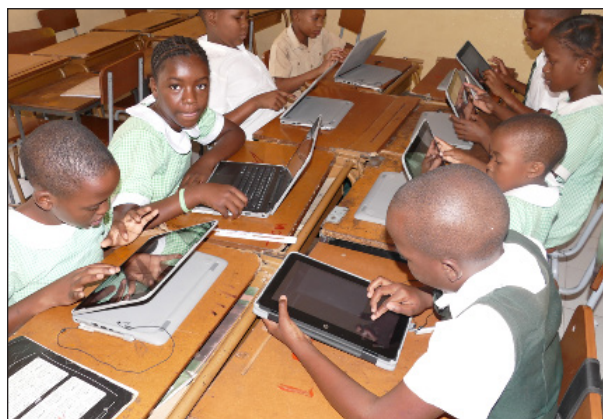


Figure 18: Students from one of the primary pilot e-schools engaged in activities (©UNESCO)

Due to the unique nature of the selected special schools, a comprehensive needs assessment led to the design of innovative ICT solutions and functional systems (the assistive devices and digital materials) to cater for learners living with disabilities.

Following the provision of equipment of the schools and the training of teachers, in the spring of 2019 UNESCO facilitated a monitoring exercise with visits to the e-schools, as well as two meetings with representatives from the e-schools to share experiences, learn from each other's experiences, and develop continuity plans.

The first two-day event took place in January 2019 and provided a platform for the schools' representatives and Ministry officials to exchange notes as well as explore synergies and possibilities for collaboration and sharing of resources. Participants discussed the challenges they face, leading to a better understanding of possible solutions and sharing strategies to improve efficiency in using ICT in the classroom. The second meeting, instead, took place in March 2019 and allowed representatives from the pilot e-schools to develop continuity plans in order to sustain the integration of ICT for pedagogy beyond the duration of the project. The plans focus on infrastructure acquisition and/or resource mobilization, teacher capacity development, development of electronic resources, and development of networks, collaboration, and synergy building with various stakeholders.

### ▪ Development of training materials on the pedagogical use of ICT and training programme

The project supported the development and quality assurance of the Zimbabwe ICT Essentials for Teachers course, inspired by the UNESCO ICT Competency Framework for Teachers (ICT-CFT). The course, which was finalized in September 2017, is designed to provide teachers with competencies to integrate ICT into their teaching and learning and to support their other education responsibilities. The course covers 12 units of study:



Figure 19: School level training at Sandara Primary School (©UNESCO)

1. ICT & policy
2. Hardware
3. Troubleshooting ICT
4. Educational internet
5. Email and social media
6. Basic Productivity Suite Skills (Word processing, Spreadsheets and Presentations)
7. Project-based learning
8. ICT and the physical environment
9. ICT to support traditional pedagogy
10. CT and the curriculum
11. ICT to support assessment
12. ICT for professional development

The course is available offline, through a USB stick, and online on a government platform: <http://www.stem263.com/>. A mobile application was also developed for the course so that it can be available to all teachers on their mobile devices

The ICT Essentials for Teachers course was used for training the teachers in the pilot e-school. A cascading approach was adopted: forty teachers (the ICT focal points and one subject teacher per school) were selected and trained on the training modules in October 2017, together with officials from three government ministries. Between October and December 2017, over 400 teachers in the 20 pilot e-schools were trained on the pedagogical use of ICT.



### ▪ Training programme in the two e-schools for learners with special needs

The project in Zimbabwe prioritized the need for inclusivity. For this reason, two of the pilot e-schools in the country are institutions that cater for students with special needs. Specifically, Magretha Hugo School has been equipped with computer equipment including desktop computers, speakers, and hi-fi stereos, with the aim of improving learning outcomes for students with visual impairment. King George School, instead, received laptops, TV sets, projectors and projector screens to support learners with various types of physical and mental disabilities.

Besides the training on the ICT Essentials, two unique training workshops took place in the schools. These included hands-on demonstrations and guidance on how to use relevant hardware and software to teach visually impaired students. Trainees could also reflect on how ICT can contribute to inclusion and facilitation of the learning processes, particularly in the areas of reading, writing and project-based learning.



Figure 20: Trainees simulating the experience of learners with visual impairment (©UNESCO)

### ▪ Development of digital resources for e-schools and training

With the aim of strengthening the capacities of teachers to make effective pedagogical use of ICT, the project facilitated the development of a repository of openly licensed curriculum resources and the training of teachers on the use of Open Educational Resources (OER).

The repository is linked explicitly to curriculum and syllabi statements allowing educators to search for resources that would support the acquisition of various outcomes. Four workshops contributed to building capacities of teachers in the development, accessing and use of Open Educational Resources (OERs) at all levels of basic education in Zimbabwe. In each workshop the participants were orientated to open content in education, Creative Commons Licensing, Developing OERs, Search Strategies to identify existing OERs and evaluation of OERs to determine suitability of resources for the Zimbabwean context. Additionally, participants were tasked to upload and tag with metadata open resources, both new and existing, into the Zimbabwe OER repository.



Figure 21: Video resource produced during one of the OER workshops. Link here: <https://www.youtube.com/watch?v=aoOlgCuC4Xk&feature=youtu.be>

Each of the four workshops focused on a specific education level and subject as follows:

- The Workshop on OERs in Infant Level Education (March 2019) built the capacities of teachers in the development, accessing and use of Open Educational Resources (OERs) in Infant Education, specifically in English, Mathematics and Science subjects.
- The Workshop on OERs in Junior Level Education (April 2019) built the capacities of teachers in the development, accessing and use of Open Educational Resources (OERs) in Junior Education (Grades 3 – 7), particularly in English, Mathematics and Science subjects. Participants at the workshop included selected teachers from Manicaland Province and representatives from the Africa University, Mutare Teachers College, and Marymount Teachers College.
- The Workshop on OERs in Ordinary Level Education (April - May 2019) built the capacities of teachers in the development, accessing and use of Open Educational Resources (OERs) in Ordinary Level Education (Form 1 – 4) specifically in Mathematics, English and Science. Participants at the workshop included selected teachers from Bulawayo Province and representatives from the National University of Science and Technology, Hillside Teachers College, and the United College of Education.



Figure 22: Group picture of the digitization workshop in August 2018 (©UNESCO)

- ▶ The Workshop on OERs in Advanced Level Education (May 2019) built the capacities of teachers in the development, accessing and use of Open Educational Resources (OERs) in Advanced Level Education (Form 5 and 6) specifically in Mathematics, Literature, Biology and Computer Science. Participants at the workshop included selected teachers from Harare Province and representatives from the University of Zimbabwe, Belvedere Teachers College, and Morgan Zintech and Seke Teachers College.
- **Strengthening of capacities of higher education institutions and teacher training colleges in using ODL and digital materials.**

The project supported educators from higher education and teacher training institutions across Zimbabwe to integrate ICT in their teaching and learning.

Training sessions targeting university staff have focused on four priority areas, as follows: Basic ICT skills; Information Literacy and Lifelong learning; Learning Management Systems (for Instructors); and Learning Management Systems (for IT administrators). Over 45 teacher educators were trained during a national workshop in November 2016.

In parallel, the project supported the training of staff from all 14 teachers' colleges in Zimbabwe as well as from four universities, in the design and development of digital instructional materials. The workshops provided trainees with skills in digitization of instructional materials, incorporation of games and gamification in instructional modules, and integration and incorporation of inclusivity in blended learning. While the training was aimed at teacher educators in all teachers' colleges in Zimbabwe, it is expected that the representatives from Zimbabwe Open University, Bindura University of Science Education, and the University of Zimbabwe, who were also in attendance, will become institutional resource persons and share their newly acquired skills with their colleagues. Also, as a result of the training, the college administrators developed work plans on how they will support digitization initiatives in their respective institutions.

A total of three workshops took place. The trainees from a first workshop in June 2018 were used as trainers for a second workshop in August 2018, which in turn facilitated four workshops in June 2019. This exercise allowed to train over 160 college lecturers from 14 colleges.

- **Establishment of a model teacher training college for ODL**

The project supported the establishment of a model teacher training institution for ODL, the Teacher College of Masvingo, while librarians from all Teachers Colleges in the country received training on applying ICT tools to support teaching, learning and research at their institutions.

UNESCO developed a situational analysis report on the pedagogical use of ICT in 13 Teachers Colleges in Zimbabwe. Survey instruments were developed and used to analyse the colleges' current situation concerning ICT in teaching and learning and in Open and Distance Learning (ODL), with a focus on gaps, priority areas and potential opportunities for collaboration. Results of the analysis were used to produce a strategic plan for effective use of ICT for teaching and learning, and ODL in teachers colleges.

The strategic plan was implemented in the Teacher College of Msvingo, which acted as a 'model institution for ODL for teacher training'. Additional internal staff training on the use of ICT was conducted by the institution itself, making use of the knowledge of the master trainers in the College. In addition, the project provided additional 16 fixed projectors, 40 desktop computers, and 42 laptops divided over in 2 trolleys. Whereas the other teacher colleges did not receive any equipment, librarians from all the 14 Teachers colleges participated in a five-day workshop in November 2018, which aimed at developing their capacities in applying ICT tools to support teaching, learning and research at their institutions.

### ▪ Development of Policy on ICT in Higher Education

The project supported the development of a Policy on ICT in Higher Education and its Masterplan.

A task team led by the Ministry of Higher and Tertiary Education, Science and Technology Development and comprising of representatives from the Ministry of Primary and Secondary Education, the Ministry of ICT, Postal and Courier Services and other national stakeholders engaged in an inclusive process that led to the finalization of an ICT in Higher Education Policy focused on the following elements or pillars:

Digital access and inclusion;

- Professional development;
- Digitized curriculum, content and assessment;
- Learning models, communities and environments;
- Innovation, research and development;
- Management and administration efficiency.

These elements detail the areas which this policy is committed to develop in order to guarantee a transformative, digitised, innovative, inclusive learner-centred higher and tertiary education system by 2030.

In anticipation of Cabinet's approval of the draft policy and to ensure its effective implementation, a guiding implementation masterplan has been prepared. The masterplan is a framework for the Ministry of Higher and Tertiary Education, Science and Technology Development (and affiliate institutions) decision-making to support the aim and objectives of the ICT in Higher Education Policy. The masterplan development process focused on concepts and standards that reduce the policy life-cycle costs of operation and maintenance. Robust discussion and debate on the critical issues related to designing an appropriate, realistic implementation plan by the important stakeholders in Zimbabwe's higher and tertiary education system took place.

### ▪ YouthMobile initiative in Zimbabwe

The project supported the organization of a series of events aimed at equipping youth with the skills to solve societal and institutional challenges using ICT, and specifically mobile applications. A training programme was designed with a focus on the following skills: design thinking (problem solving skills); developing mobile applications (coding skills); and social entrepreneurship (monetizing mobile applications). The exercise included three activities: a bootcamp, online support, and a shark tank.

The boot camp was a 5-day short but rigorous and intensive training workshop for 26 undergraduate students and recent graduates. The overall objectives of the exercise were for the young creatives to develop the essential ability to combine empathy, creativity and rationality



Figure 23: Workshop to develop the master plan (©UNESCO)



Figure 24: Students engage in group work on ideation during the boot camp (©UNESCO)



to meet societal and institutional needs and; drive social entrepreneurship; and understand the app development lifecycle. After the event, the participants returned to their institutions to work on a mobile app development assignment to solve a social or institutional problem identified during the boot camp. During this period the students were coached online through Skype and other social media platforms.

In March 2019, the YouthMobile Initiative concluded with a Shark Tank event hosted at the University of Zimbabwe in Harare. Twenty-one students from tertiary institutions across Zimbabwe and recent graduates showcased their newly developed mobile application and three young creatives were awarded with prizes for their innovative and creative mobile applications.

#### 4.5 Cross-country activities and visibility

To facilitate peer learning and exchanges among country teams, a series of cross-country activities were also organized. A workshop for the finalization of the country-level work plans took place in Zimbabwe in May 2016. A study tour focusing on e-school models and open and distance learning was organized in September and October 2016 in the Republic of Korea, with the collaboration of KERIS and KNOU. A cross-country meeting for peer learning and resource sharing took place in Rwanda in January 2018 while the final project meeting gathered the country teams at the UNESCO Headquarters in France in June 2019.

With the support of the project, members of the countries' project teams also attended a number of events related to ICT in education, such as the UNESCO Mobile Learning Week (2018 and 2019), the Qingdao Conference on ICT and post-2015 education (2016 and 2017), the Beijing Conference on Artificial Intelligence and Education (2019), the 2nd African Ministerial Forum on ICT Integration in Education and Training (2016), eLearning Africa (2018), among others.

Finally, efforts were made to provide visibility to the project activities and results.

##### ▪ Workshop for the finalization of the country-level work plans

Following the needs assessment exercise, and to ensure country ownership of the project and alignment to national needs and strategies, UNESCO HQ organized a regional workshop in Harare, Zimbabwe, in May 2016, to finalize the country-level project documents and work plans. Participants included the project core team members from Mozambique and Zimbabwe (while Rwandese participants were not able to travel), UNESCO programme specialists from HQ and field offices, and experts from key Korean institutions, such as Korea National Open University (KNOU), Korea Education Research Information Service (KERIS) and Chuncheon National University of Education. All participants worked collaboratively to agree on the main expected results per project component and plan the in-country activities for the following three years accordingly.

##### ▪ Study tour on e-schools and ODL in the Republic of Korea

As the Republic of Korea represents a best practice in the fields of e-schools' development, teacher training for ICT in education and open and distance learning (ODL), UNESCO HQ organized a study tour/training in Korea for the three country project teams in collaboration with two prestigious Korean institutions: Korea Education Research



Figure 25: Participants of the study tour on e-schools and ODL in the Republic of Korea (©KNOU)



Information Service (KERIS) and Korea National Open University (KNOU). The activity was designed with the purpose of strengthening the capacities of the three national project teams in key areas of the project and gain insight, knowledge and competences for improved implementation of activities in the respective countries.

The study tour took place on 26-30 September 2016 and consisted of visits to various institutions as well as training courses to be delivered by KERIS and KNOU. Participants were divided in two groups. They followed the same programme of the first and last day but were divided for three days as follows:

1. One group received training on e-schools and teacher training for ICT in education. The group moved to KERIS facilities in Daegu to attend the training. Representatives from Mozambique and Zimbabwe attended this leg of the training.
2. One group received training of open and distance learning at KNOU in Seoul. Representatives from the three countries attended this leg of the training.

As a result of the activity, participants have learnt about change management through the experience of the Republic of Korea; have revised key concepts and have come to a common understanding of the topics at hand; have engaged in discussions with Korean partners; have learnt about the application of e-assessment in the Republic of Korea; have learnt about the Korean experience with e-schools, ICT-based platforms to support educational administration, and ODL-related policies at KNOU.

### ▪ Second regional UNESCO-KFIT meeting for peer learning and resource sharing

UNESCO organized the second regional meeting of the UNESCO-KFIT project in Kigali, Rwanda in January 2018, supporting peer learning in Mozambique, Rwanda and Zimbabwe.

Following the regional meeting that took place in Harare, Zimbabwe in May 2016 and the study tour that took place in September 2017 in the Republic of Korea, this event was the first occasion for the three teams to come together and learn from progress attained in the respective beneficiary countries. It also represented a chance to better prepare for the final implementation phase of the project, due to end in June 2019, with a view of enhancing collaboration among countries, engaging in joint activities and exchanging resources and learning experiences.

Delegates from the three country teams had the chance to present the achievements, challenges and lessons learnt for the various components of the project. This includes e-school model piloting, e-assessment, teacher training on the pedagogical use of ICT, Open and Distance Learning (ODL) and policy development, and UNESCO's Information for All Programme. Various strategies and solutions were also identified with the purpose of ensuring continuous peer learning among the three countries and improving internal and external communication.



Figure 26: Participants of the second UNESCO-KFIT project meeting in Kigali (©UNESCO)

### ▪ Final project meeting

A final project meeting was held at the UNESCO Headquarters in Paris in June 2019. This meeting presented the opportunity to meet and exchange on the achievements, challenges and lessons learned during this three-year project, and to evaluate on best practices in view of preparing a Phase II of the UNESCO-KFIT Project.

In attendance were the representatives of the respective countries' ministries along with their permanent delegations, members of the country project teams, the UNESCO Headquarters project coordinating team, as well as representatives of various organizations from the Republic of Korea, partner institutions and the external project evaluation team.

Following an overview of achievements, the meeting divided into seven thematic seminars that drew examples from project countries. The themes explored were ICT in Education policy; Information for All Program; Teacher training on pedagogical use of ICT & ICT Competence Frameworks for Teachers; Digital resources and OER; Open and Distance Learning; E-school models; EMIS and e-Assessment; and Sustainability and Partnerships.

A preliminary evaluation of the KFIT Project was presented based on first impressions of the project. Talks about a Phase II proposal was reserved for the final day of the meeting, and discussions were geared around continuing the project funded by the Republic of Korea in three new countries: Senegal, Côte d'Ivoire and Ghana.

### ▪ Final project evaluation

An external company has completed an extensive evaluation of the project. Following a competitive bidding process, the company Ockam-IPS was selected as it demonstrated extensive expertise in the area of education systems in Africa and has already successfully conducted a large number of evaluations in Africa in the area of education and ICT in education, including for UNESCO projects. The executive summary of the evaluation can be found in Annex 7\*.

### ▪ International Policy Dialogue on IFAP priority areas in BRICS countries

The African Centre of Excellence for Information Ethics (ACEIE) and the University of Pretoria, in collaboration with BRICS representatives, UNESCO and the Information for All Programme (IFAP), hosted an international conference on IFAP Policy Dialogue in Cape Town, South Africa in July 2018. Delegates from 18 countries, including Mozambique and Zimbabwe, representing academia, government, business and civil society attended and presented on research matters relating to the six IFAP priority areas, including information for development, information literacy, information preservation, information ethics, information accessibility and multilingualism. IFAP activities on capacity development for building knowledge societies in Rwanda, Mozambique and Zimbabwe, within the framework of the UNESCO-Korean Funds-in-Trust (KFIT) project, were presented.



Figure 27: Delegates at the IFAP Forum come together for a group picture (©UNESCO)

### ▪ eLearning Africa

UNESCO participated in the eLearning Africa Conference 2018 in September 2018 in Kigali, Rwanda. The UNESCO KFIT-Rwanda project hosted two workshops to demonstrate KFIT Rwanda's work in ICT Essentials for Teachers Training, simulation for teacher training, and e-assessments. Approximately 60 participants gained hands-on experience of these tools during the workshop. In addition, the KFIT Rwanda project also presented the first ever e-assessment system and pilot in Rwanda. The presentation was well-received by participants, ranging from government officers and academics.

\* Annexes available upon request

### ▪ Mobile Learning Week

Eleven representatives from the country project teams in Mozambique, Rwanda and Zimbabwe attended the 2019 edition of the Mobile Learning Week, the flagship United Nations event on ICT for education, from 4 to 8 March 2019 at the Headquarters of UNESCO in Paris.

During the event, participants from the project teams had the chance to attend various sessions animated by policymakers, practitioners and stakeholders in the area of artificial intelligence for sustainable development and education. MLW 2019 represented a unique opportunity for representatives of the project to share their knowledge and jointly plan the next-generation of intelligent mobile learning.

In a closed meeting, participants could also exchange with their peers from other beneficiary countries on the latest achievements within the project, as well as on the persistent challenges and measures that are being put in place for the impact of the activities to continue beyond its end date in June 2019.

### ▪ Forum on Knowledge Societies for Sustainable Developments

Representatives from the project country teams in Mozambique, Rwanda and Zimbabwe participated in the Forum on Knowledge Societies for Sustainable Development in Africa, organized by UNESCO in Harare from 15 to 16 March 2019.

The delegates from 18 countries across Africa highlighted their important role as active contributors to the IFAP governance structures in order to harness knowledge societies for the sustainable socio-economic development of Africa through the six IFAP priority areas (information for development, information literacy, information preservation, information ethics, information accessibility and multilingualism in cyberspace).

The forum also allowed participants to exchange best practices in working towards knowledge societies in their respective countries. Mozambique and Zimbabwe IFAP Committees' achievements were highlighted as examples to learn from, as the two countries have made important strides in localizing the IFAP priorities. Speaking at the Forum, the Ambassador of the Republic of Korea to Zimbabwe also reiterated his country's commitment to support ICTs development in Africa.



Figure 28: The UNESCO-KFIT project team come together for a group photo at Mobile Learning Week 2019 (©UNESCO)

# Direct Beneficiaries, Key Partners and Other Stakeholders

Direct beneficiaries of the project include policy makers, teachers and learners. The details of the beneficiaries of the main training events can be found in Table 5 below. It is worth noticing that there is a large number of unrecorded direct beneficiaries of the various legacy outputs of the project such as the ICT in education policy documents, frameworks, training materials, teaching and learning resources, platforms and repositories and other outputs of the project.

Additional details about the individual workshops and training sessions can be found in Annex 6\*.

Activity	Group	Total N°
Teacher training on pedagogical use of ICT in Mozambique	Teachers	528
Training on the production of OER materials in Mozambique	Teachers	24
Training on multimedia production for IEDA in Mozambique	Teacher educators and technicians	27
Training on ICT integration in teacher training colleges in Mozambique	Teacher educators	250
YouthMobile initiative	Students	225
Teacher training on ICT Essentials in Rwanda	Teachers	150 (+ 11 trainers)
Training on e-assessment in Rwanda	Teachers and policymakers	70
Training on ODL for University of Rwanda	Teacher educators and e-learning officers	150
Training on ODL for University of Rwanda with KNOU	Teacher educators and e-learning officers	60
Teacher training on ICT Essentials in Zimbabwe	Teachers	400 (+40 trainers)
Training on OER in Zimbabwe	Teachers, policymakers and university staff	200
Training on ODL for teacher educators in Zimbabwe	Teacher educators	45
YouthMobile Initiative in Zimbabwe	Students	26
Study tour in the Republic of Korea	Policymakers and university staff	10
Capacity development workshops on policymaking in Mozambique	Policymakers	About 60
Capacity development workshops on policymaking in Rwanda	Policymakers	About 100
Capacity development workshops on policymaking in Zimbabwe	Policymakers	About 80

Table 6: Beneficiaries of main training events and opportunities

\* Annexes available upon request



# Engagement, Ownership of Direct Beneficiaries, Key Partners and Other Stakeholders

The **country project teams** were established with full collaboration from the respective Ministries of Education. The full involvement of the beneficiary countries since the initial stage of the project establishment ensured full ownership of the project and institutionalization of project activities within the framework of national strategies and activities.

For the implementation of country-level activities, specific task teams were setup to develop strategic documents (such as the e-school model documents, policy documents, etc.) and steer the successful implementation of the project.

A Directors' meeting organized by UNESCO HQ allowed to agree on the **management and coordination modalities** of the project between the HQ coordination team and the field offices. Focal points at the level of each field office were identified. It was decided that country project teams would manage the implementation at the country level, field offices would manage the funds and provide direct support to implement the country activities. A dedicated National Programme Officer was recruited in each field office, to be supported and supervised by education and communication and information programme specialists. The HQ coordination team, consisting of the Chief of the ICT in Education Unit, a coordinator (seconded expert from the donor), and an Associate Project Officer, would coordinate overall activities, monitor and backstop project implementation as well as consolidate reporting to, and liaison with, the donor.

A **team with external partners**, and in particular with Korean institutions such as KERIS and KNOU, was established for the carrying out of several activities within the project, including the needs' assessment exercise, the participation in the work plan finalization workshop, the organization of the study tour, etc.

Two **implementing partnership agreements with KNOU** were signed to support the strengthening of capacities of the Institute for Open and Distance Learning in Mozambique and the University of Rwanda in Rwanda, to deliver high-quality distance education for teachers.

**Working relationships with implementing partners**, including the respective Ministries of Education and Higher Education in the beneficiary countries, higher education institutes and universities, teacher training colleges, etc., have been strengthened thanks to the in-country missions undertaken UNESCO HQ and FO staff members in the beneficiary countries, including the needs' assessment missions in Mozambique and Zimbabwe in March 2016 and the monitoring mission in Rwanda in July 2016.

# Exit Strategy and Sustainability

Various mechanisms such as strengthening capacity, institutions, funding arrangements, transfer of responsibilities, links with work being done by other partners were adopted to sustain the activities under the project. A few highlights on the exit strategy and sustainability of the project are summarized below:

The institutionalization of the project activities since the beginning of the project is one of the main strategies to sustain the project activities and impacts.

In each beneficiary country, the project is aligned with the key national education strategies. The country project documents and work plans have been developed on the basis of the needs captured by the needs' assessment exercise and the countries' strategic priorities.

A very close collaboration with the relevant Ministries involved in the project in the three countries has allowed to attain high ownership of the project from the side of the governments. Country project teams have been fully involved in the inception meeting, needs' assessment phase and project document finalization. This ensured that capacities of national teams with respect to planning and understanding of key issues in ICT in education have also been strengthened.

The setup of permanent structures such as the ICT for Education Working Group in Rwanda (composed of representatives from relevant Ministries and partners meets every quarter to discuss all ICT in education issues in the country) and the national IFAP committees contribute to the continuous engagement of national stakeholders beyond the lifespan of the project.

The production and institutionalization of policy documents, frameworks, standards, curriculum maps, etc. ensures that the outputs generated with the support of the project are used beyond the duration of the project. For example, in the case of Rwanda, the programme for training in-service teachers on the pedagogical use of ICT is going to be rolled out at the national level with the support of another donor (KOICA).

Participation in various events has allowed the country project team to present the project and increase their level of ownership of the project.

There has been an effort to synergize the KFIT project with key projects being or to be funded by other key partners (KOICA, Huawei), with the aim of enhancing the sustainability of the project.

In the project countries, the following sustainability measures were put in place:

- Building partnerships with interested institutions, within and outside the countries.
- Planning for the use and adoption of the outputs produced by the project (policy documents, training frameworks and programmes, etc.) at the national level.
- Establishing monitoring and evaluation systems to assess change after the end of the project.
- Involving the school community in both the financing and monitoring of school activities.
- Creating an information system to ensure the collection of data on the state of computer equipment and connectivity.
- Allocation of budget for activities previously funded by the project in the national and/or institutional annual budgets.

# Visibility

The contribution of the Korean Funds-in-Trust has been recognized in all project documents, concept notes, etc. The implementation of the project has involved both Education and CI Sectors of UNESCO, the three field offices, and the concerned ministries of the three countries.

The website for the project has been established on the UNESCO website: <http://en.unesco.org/themes/ict-education/kfit>

A periodic update was circulated to project teams and stakeholders involved in the implementation of the project with the purpose of disseminating information about the latest developments in project implementation. The update was also uploaded on the project website. Six updates have been published in total.

A brochure for the project has been produced, highlighting the main activities under the project, the project teams and the project background. The brochure has been printed for dissemination by the UNESCO HQ team and the field offices.

Country-level brochures have been produced for Rwanda and Zimbabwe.

A general project kakemono and country-specific roll-up banners have been produced in the three countries. In Mozambique, a Portuguese version of the kakemono has been produced and is currently displayed at the premises of the Ministry of Education in Maputo.

News articles have been posted on the websites of the Field Offices, as well as on the main project webpage.

Various videos have been produced, for instance on the pilot of the UNESCO Rwandan ICT Essentials for Teachers or on the support of the project towards the development of knowledge societies in Rwanda.

Templates for agendas, concept notes and other documents have been produced, so that the project documents always had the logo of the donor and the same visual elements that make up the visual identity of the project.

# Lessons Learned

On the basis of a self-evaluation and the final project evaluation undertaken by international experts, the following lessons have been learnt:

Project activities should align to various ongoing development and initiatives of national stakeholders and respond to existing and emerging needs. The comprehensive needs analysis and the inclusive process pursued to finalize the country-level work plans were crucial for the efficient implementation of the project, as they ensured national ownership and buy-in of the project. The setup of national country teams and nomination of focal points for the project overall and for sub-activities within the project ensured active and continued engagement of government stakeholders.

The contributions to policy developments for ICT in Education helped establish a basis for potential (long-term) impact in the future.

The development of an e-school model, with the provided equipment, teaching and learning resources and training programmes, provided the means to expand the application of ICT in education and access to education. However, scaling up at the national level is difficult without donors' support. For instance, the scaling up at national level of the ICT Essentials for Teachers in Rwanda is possible because of KOICA intervention.

UNESCO made considerations and provisions for sustainability in most project activities. However, because the project was designed as a pilot project, selecting a limited number of institutions and schools for implementation, UNESCO should require the development of a sustainability strategy during the development of the workplan, possibly as a necessary precondition to start implementation.

The project links to other UNESCO-supported initiatives and builds on institutional experiences. This is the case of activities inspired by the UNESCO ICT Competency Framework for Teachers, among other examples. Without such provisions, project countries depend on additional funding to potentialize the results of the KFIT project.

UNESCO is well positioned in terms of connections, available expertise, infrastructure and convening power to carry out a project of this size and impact. Where relevant, the project was well positioned in larger donor coordination frameworks. Sometimes coordinated by national stakeholders, in other countries UNESCO itself actively pursued a structured positioning among other development partners.

The required expertise and time needed for executing the procurement of technical equipment proved a substantial bottleneck, leading to delays in the implementation of activities that depend on such equipment.

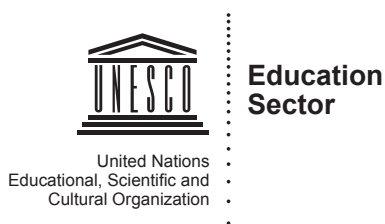
The existing management arrangements provided an overall efficient support to country project teams and ensured efficient and timely implementation of most activities. There is potential for Field Offices to better support NPOs, who perform a crucial role in the overall management arrangement but start their work with an information disadvantage with regard to the project as well as to UNESCO procedures.

Peer-learning and resource sharing mechanisms helped beneficiary countries learn from each other's experience. More can be done to expand the potential for learning to countries and contexts that are not directly beneficiaries of the project. To improve the learning potential, more attention can be paid to better incentivise sharing of materials, experiences and documents, and increase the use of existing knowledge management tools (online portals, team pages, etc.) during project implementation.



### UNESCO Education Sector

Education is UNESCO's top priority because it is a basic human right and the foundation on which to build peace and drive sustainable development. UNESCO is the United Nations' specialized agency for education and the Education Sector provides global and regional leadership in education, strengthens national education systems and responds to contemporary global challenges through education with a special focus on gender equality and Africa.



### The Global Education 2030 Agenda

UNESCO, as the United Nations' specialized agency for education, is entrusted to lead and coordinate the Education 2030 Agenda, which is part of a global movement to eradicate poverty through 17 Sustainable Development Goals by 2030. Education, essential to achieve all of these goals, has its own dedicated Goal 4, which aims to *"ensure inclusive and equitable quality education and promote lifelong learning opportunities for all."* The Education 2030 Framework for Action provides guidance for the implementation of this ambitious goal and commitments.



## Stay in touch

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