STEM Teacher Education and
School Strengthening Activity Project
(STESSA)

Quarterly Report
July 1st through September 30th, 2019

Egyptian professors engaged in Diploma course writing and professional development

This document was produced for the United States Agency for International Development review. It was prepared by 21PSTEM for the STESSA Project.
**Acronyms:**

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<tr>
<td>21PSTEM</td>
<td>The 21st Century Partnership for STEM Education</td>
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<td>CCIMD</td>
<td>Curriculum Center and Instruction Materiel development</td>
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<td>COP</td>
<td>Chief of Party</td>
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<td>COPs</td>
<td>community of Practices</td>
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<td>COR</td>
<td>Contracting Officer’s Representative</td>
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<td>COS</td>
<td>Classroom Observation Scale</td>
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<td>ESC</td>
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<td>FoE</td>
<td>Faculty of Education</td>
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<td>GAEB</td>
<td>General Authority for Educational Building</td>
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<td>M&amp;E</td>
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<td>Professional Development Institute</td>
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<td>Professional Learning Community</td>
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<td>Supreme Council of Universities</td>
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<td>STEM</td>
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<td>STESSA</td>
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Executive Summary:
STESSA has witnessed significant achievements during reporting period (July-September 2019) in terms of: (1) Under Component 1: conducted the training of faculty members of the four targeted Egyptian universities, completed the development of course descriptions for the STEM Teacher and Leadership Diploma Tracks, and obtained the approvals and Ministerial Decree necessary to start the implementation of the Diploma programs in Zagazig University; and, (2) Under Component 2: strengthened capacities of STEM Unit, supported the training of teachers and educators and updated and strengthened STEM curricula. The following summarizes the progress and main achievements under both Components, 1 and 2:

Component 1: STEM Teacher Education
During this reporting period, emphasis was placed by STESSA and the Egyptian partner universities on developing the course description and syllabi of the two professional Diploma programs: STEM Teacher Education Diploma and STEM Educational Leadership Diploma. Further, STESSA started equipping the STEM Smart Teaching Room at the Faculties of Education and organized extensive training activities to prepare faculty members to (1) participate in the development of course description; and, (2) teach STEM courses to students who will be enrolled in the Diploma tracks. As a result, 193 faculty members received 203 training opportunities during the period from July 8 through September 5, 2019.

In September 2019, the FOE at Zagazig University succeeded in obtaining the necessary approvals and Ministerial Decree of the Minister of Higher Education needed to start the implementation of both Diploma programs. The FOE Dean held a kickoff event at the FOE, to celebrate being the first FOE and university implementing the STEM Diploma Program nationwide.

Component 2: STEM Schools Strengthening
STESSA provided extensive support to the STEM Unit to help to implement the summer training (PDI) for STEM teachers, school leaders, fab lab managers, capstone leaders, journal
item writers, and local supervisors. A total of 490 teachers and 119 administrators and officials completed a minimum of three days of training during the reporting period. STESSA also helped with the review of STEM curricula to (1) ensure alignment with the updated MOETE learning outcomes and, (2) strengthen integration across STEM subjects and humanities. In addition, STESSA supported the implementation of the summer camp for grade 10 students in all STEM schools through training of trainers, orienting school leaders, and monitoring the implementation of the camp at the school level.

In recognition of the process currently used for the selection of STEM teachers, the MOETE requested STESSA’s assistance to expand the use of STEM content and conceptual understanding exams for the selection of new teachers for public schools.

**Activity Description:**

1. **Component 1 Activities; STEM Teacher Education**

   During this reporting period, STESSA supported the development of sustainable STEM teachers and leadership education programs through multiple activities. In light of the Bylaws, previously approved by the Education Sector Committee (ESC), STESSA placed a particular emphasis on constructing the syllabi of the two professional Diploma programs (STEM Teacher Education Diploma and STEM Educational Leadership Diploma) and conducting training sessions for the faculty members who will teach the Diploma courses. As a result, the development of course descriptions and syllabi was completed and the training of 193 faculty members was provided.

   The following is a description of the activities implemented during the reporting period:
1. A Preparatory Stage: High-Level Policy Decisions at the National Level

STESSA held several meetings during the reporting period with the Deans of the Faculties of Education (FOE), Science and Engineering in Ain Shams, Mansoura, Assuit, and Zagazig universities to facilitate high-level decision-making. As a result, the Deans agreed on the following guiding principles to ensure the success and sustainability of the program:

- Planning, design, and implementation of the Teacher Education and Leadership courses will reflect the principles of Egyptian STEM Schools’ teaching and learning and assessment systems.
- Forging effective partnership and collaboration among Egyptian faculty members in the Faculties of Education, Engineering, and Science at the four universities on one hand, and between Egyptian and US faculty members, on the other hand, are necessary to ensure continued professional development and collaboration during the academic year and beyond.

The Deans of the FOEs, Science and Engineering at Ain Shams, Mansoura, Assuit, and Zagazig universities, agreed to have unified bylaws for the two STEM Diploma tracks, in the four universities. The ESC reviewed the draft bylaws and provided feedback and recommendations to the FOE Deans. Accordingly, each of the Diploma tracks will be implemented in three semesters instead of two. The Deans agreed to apply the credit hour system. The courses will mostly be conducted in the English Language. They agreed that each university will determine the days and times of conducting the Diploma courses, they believe they will mostly be held in the afternoons and on Saturdays.

On July 10th, ESC Secretary-General met with the FOE Deans of Ain Shams, Assuit, Mansoura, and Zagazig to share with them the final version of the bylaw. The four Deans endorsed the final version and agreed to submit it to the ESC to proceed with the approval process. On September 4, 2019, the Ministerial Decree was issued by the Minister of Higher Education, approving the implementation of the two STEM Diploma tracks in the Faculty of Education at Zagazig University. The three FOEs in Ain Shams, Assuit, and Mansoura were
still in the process of obtaining approvals from the University Council and President before final submission of the bylaws to the ESC.

On the other hand, the Deans agreed to apply the following procedures:

- Use unified course descriptions and academic regulations;
- Apply unified financial regulations and incentives for all the faculty members who participate in teaching the STEM courses;
- Each FOE will use the Smart STEM teaching room to host the STEM Diploma courses. With STESSA’s support, these rooms will be prepared to meet the requirements of STEM education.

**AWP 1.A.3: The pros and cons of creating a special administrative unit within each university:**

Concerning the communication and decision-making among the Faculties of Education, Science, and Engineering, the Deans agreed that the **University Council Decree** approving the STEM Diploma tracks in each university will be followed, as it is considered the legal reference for the three colleges in each university.

To facilitate communication and coordination between all parties, Faculties of Education, Engineering and Science within each university on one hand, and STESSA team and U.S. experts, on the other hand, the Deans decided that a **STEM Program Coordinator** will be nominated by the FOE Dean to carry out these responsibilities besides his/her regular duties in his/her own department.

**AWP 1.A.4: Selection of faculty members for the STEM Diploma Programs and incentives:**

During the last quarter, the Deans and Deputy Deans confirmed that the faculty member who will be teaching the STEM Diploma courses should be able to teach in English. These faculty members will have to complete the STESSA training during the summer, and will have to be committed to participate in a weekly call with STESSA’s U.S experts and STESSA-supported
Professional Learning Communities (PLCs) for technical guidance and continuous professional development.

In terms of incentivizing the faculty members, the Deans decided to apply a unified incentive system for faculty members who participate in teaching the STEM courses.

AWP 1.A.5: Develop objective criteria and processes for the selection of the Undergraduate and Diploma students:

In preparation for the start of the Diploma courses, the Deans decided that Information Technology and English language proficiency will be considered as the main criteria for the selection of the Diploma students. The FOEs will be responsible for the administration of the English language admission test. The students who passed a nationally recognized English language test, such as the TOEFL, will be exempted from taking the English language admission test. The Diploma applicant should be a FOE graduate. If not, he/she must have a General Diploma in Education in order to be accepted in one of the STEM Diploma programs.

AWP 1.A.7: Develop parameters for equipment as part of STESSA:

During this reporting period, STESSA facilitated discussions with the Deans of the Faculties of Education, Science, and Engineering around the parameters for providing the necessary equipment to support STEM teaching and learning in each university. They emphasized the need to establish a “STEM Smart Teaching Room” in each of the FOEs. These rooms will be used to support students’ learning and scientific research on one hand, and the professional development of faculty members on the other hand.

AWP activity 1.B. Preparatory Stage: High-Level Policy Decisions at the University Level.

During the reporting period, STESSA facilitated discussions among the Deans of the Faculties of Education, Science, and Engineering in each of the Egyptian partner universities to agree on university-level policies necessary to support the effective implementation of the two Diploma tracks. The Deans have been working with their respective University Presidents to formalize the relationship between the faculties of Education, Science, and Engineering in each university,
Similarly, mechanisms for coordination and management of faculty, processes, and students-related matters will be streamlined. The Deans in the four universities decided to have periodic meetings to exchange information and updates. They consider the Diploma programs at Zagazig University as a pilot project that will inform the development of a better university plan.

AWP 1.C: Course Development

1.C.2: Activity 2: Development of Course Description and Syllabi:

The results of the STEM school curriculum review, conducted in the last quarter to compare the STEM school courses with Learning Outcomes of existing courses, informed the development of course descriptions and syllabi of the two Diploma tracks.

During this reporting period, STESSA conducted a series of Design Studio workshops with faculty members representing the Faculties of Education, Science, and Engineering in the four Egyptian Universities, to develop course descriptions and syllabi for both Diploma tracks. Every Faculty assigned two of its faculty members per specialization for compulsory courses and one faculty member for the elective courses. Participants were divided into six groups, representing the different components of the two Diploma tracks.

The Design Studio workshops provided relevant opportunities for the Egyptian faculty members to work with professors from U.S. partner universities on course development. In the beginning, STESSA experts introduced the participants to STEM education concepts and philosophy. They provided orientation on the foundation of curriculum design, grounded on international standards, STEM school curriculum in terms of the Learning Outcomes, and capstone projects. Essential to the training was the emphasis on the development of critical thinking skills needed to address Egypt’s Grand Challenges and the pedagogy used in delivering the curriculum. The workshops supported the establishment of collaborative relationships among the Egyptian and U.S. counterparts. This is considered the first step towards the initiation of professional learning communities (PLCs) among the participating faculty members.
During the Design Studio workshops, the participants created the new syllabi for the two Diploma tracks based on the STEM bylaws and Egyptian context on one hand, and the latest trends in U.S. universities on the other hand. Through STESSA’s support, the Egyptian faculty used an engineering model called “Backward Design” to develop the courses of both Diploma tracks.

STESSA experts helped to create a shared Google drive which included a folder for each course. This folder had two main components: course resources and one live unified course syllabus template. The Egyptian faculty members were able to edit their live syllabi templates during the workshops. Peer review was used throughout to validate the content of the syllabi and to get feedback. Upon the conclusion of each block, the syllabi were uploaded and reviewed by both U.S. experts and Egyptian faculty members to make final revisions as needed. By the end of the Design Studio workshops, the first version of forty courses was developed to be utilized in the academic year 2019/2020.

1.C.2: Activity 3: Compilation of Learning Resources:

In addition to the courses’ development, U.S. Universities experts worked with Egyptian faculty members to collect different resources to support the teaching and learning of the Diploma courses. These resources were uploaded on a shared Google drive. This drive included a folder for each course and was made accessible to the faculty members who will be teaching the Diploma courses.

1.C.3 Conduct on-site assessment of IT Infrastructure:

In September 2019, STESSA’s IT specialist did an initial assessment of the IT infrastructure of the Faculty of Education in Zagazig University, to determine the essential IT requirements for starting the Diploma programs and establishing a Smart Teaching room. Based on this assessment, STESSA and the Zagazig FOE counterparts agreed on the IT equipment that will be
provided by STESSA to establish the Smart Teaching Room and the FOE contribution in terms of internet and other running costs.

I.D Faculty Development

During the reporting period, STESSA implemented the training plan and design studio workshops, with the participation of the faculty members, engaged in the design and implementation of the Diploma courses. The implementation of the workshops spanned from July 8th till September 5th, 2019. Prior to the course development workshops, STESSA conducted a needs assessment survey of the Egyptian faculty members (1.D.1) to ensure that their training needs will be addressed.

The Level 1 training program designed by STESSA experts (1.D.3) addressed some of these training needs. The training participants were divided into groups; each group participated in approximately 9 to 10 days of training in STEM education strategies and concepts, curriculum backward design in writing course descriptions for the diploma tracks, capstone training, and assessment techniques in STEM education. Other training needs will be addressed by STESSA experts and partner U.S. universities during the course of the year through face-to-face and virtual training, Faculty Communities of Practice (CoPs), and ongoing coaching and mentoring.

1.E Faculty Communities of Practice (CoPs)

During the reporting period, STESSA started the planning process for the establishment of Communities of Practice (CoPs) with counterparts at Zagazig University. The FOE STEM coordinators, nominated by the Deans, organize and participate in the CoPs, document them, and ensure they take place promptly. The CoP plan will be drafted jointly by Egyptian and U.S. University members in the next quarter, once the IT equipment and internet connectivity are installed in the Smart Teaching Room. This activity started in Zagazig and will be implemented
in the other three Egyptian University partners once they obtain the Ministerial Decree and start initiating the Diploma courses.

1.G Internships and Practicums


STESSA supported the development of practicum courses, through the Diploma course design process, for both teachers and leaders.

For Teachers: practicum 1 provides opportunities for participants to practice teaching in a STEM school. Practicum 2 provides additional opportunities for participants to practice teaching in a STEM school and will enable them to acquire the skills of planning, implementation, and assessment, including capstone mentoring. In addition, there will be more emphasis on practice with instructional technology appropriate for the STEM school curriculum.

For Leaders: Practicum 1: it is an experiential course that is designed to enable participants to acquire innovative research-based leadership skills relevant to the Egyptian STEM Schools through structured observations and investigations, guided leadership practice, reflection, and mentor feedback in the STEM schools

Practicum 2: This field-based experiential course. Activities include observing key leadership practices and events, gathering and analyzing data and administrative documents relevant to the school improvement process, conducting interviews with key stakeholders, school leaders shadowing and guided individual and group reflection on these activities focused on addressing challenges.

To support the implementation of the practical courses, STESSA COP negotiated with the MOETE Deputy Minister, who approved providing the Diploma student teachers and leaders with paid time to do the course work in one of the STEM schools.
2. Component 2 Activities; STEM Schools Strengthening Activity

2.A. School-Based and Immediate:


During the reporting period, a two-week training for school leaders’ program was conducted through the collaboration between STESSA and the MoETE. This training was divided into two sections:

1- New School leaders training: STESSA provided eight days of “Potential STEM School Leaders Training” for twenty-one newly selected school leaders at El Obour STEM School. The first five days of training introduced the participants to the STEM Education System and schools. They were also trained in STEM Curriculum, assessment system, PARLO Tracker, Capstones’ project, and Fab labs. Finally, the training introduced them to good leadership practices and the concept of Professional Learning Communities. In the last three days of training, the training participants had the opportunity to reflect on perceptions of good leadership, explore different leadership styles; discuss linkages with faculty, staff and students. The STEM Unit members attended the training as observers. At the end of the training, the STEM Unit selected the best trainers to work at one of the STEM schools as a school leaders or deputies.
2- **Existing school leaders training:** The current principals and deputies of STEM schools attended a three-day training in Maadi school. The main objectives of this training were to help them do the following:

- Reflect upon the 2018-2019 school year.
- Review and Revise School Improvement Plan
- Plan to engage school teachers and staff in the development of School Improvement Plans.
- Review the Draft of Principal Evaluation Plan and provide feedback
- Develop an understanding of the elements of an effective PLC
- Learn how to facilitate specific protocols related to PLC.

To plan for PLCs virtual meetings, the school leaders were divided into three clusters according to the school’s geographic location: Delta, Central, and Upper Egypt. The leaders in each cluster worked together to set the norms and roles of each participant and the meeting schedule for the first semester.

**AWP 2.A.2: Professional Development for Teachers**

During the reporting period, STESSA provided technical assistance to help the MOETE/STEM Unit organize a series of training (Summer PDI) for teachers with different levels of experience:
In July 2019, a two-week training was conducted for 95 new teachers, of both STEM subjects and humanities, at El Obour School. The training provided teachers with an overview of STEM education’s concepts and philosophy, STEM curriculum, and practical activities. STESSA’s experts trained STEM trainers and helped them to review and revise the training manuals to emphasize integration and update of activities. Also, STESSA’s experts observed the trainers during training sessions and provided them with feedback to help them improve their performance.

On the 28th of July, STESSA supported the MOETE/STEM Unit conducting a one-week training for 72 expert teachers, mostly STEM teachers, who have been working in STEM schools for more than five years. The training was delivered by a group of U.S. subject-matter experts to deepen teachers’ mastery of content and advanced practical training.

On the 18th of August, another group of STEM teachers (Developing and Experienced) who spent less than five years working in STEM schools, attended a one-week of training in STEM curriculum, pedagogy, assessment, and capstone.

On the 25th of August, the humanities teachers (Developing and Experienced) who have a similar experience, i.e. less than five years attended a one-week of training in curriculum, pedagogy, assessment, and capstone. This training was fully conducted by the Egyptian trainers.

August 25 through September 1st, at the request of the STEM Unit, STESSA conducted a Design Studio to enhance the alignment between STEM curriculum and updated MOETE learning outcomes and enhance curriculum integration. As a result, STEM school teachers needed to learn about these updates and the implications on STEM teaching and learning. Accordingly, a two-week Deep Dive training was conducted, during the period August 25 through September 1st, for the STEM Teachers who already work in STEM schools, and those who were newly assigned to work in STEM schools. The training, which was mainly supported by STESSA’s experts, aimed to increase teachers’ knowledge and familiarity with the updated curriculum and
provide them with opportunities to practice the lab activities and writing new lesson plans for the first semester. The training enhanced adherence to environmental and personal safety; and increased cognitive demand for practical work. STESSA experts provided technical assistance and coaching to teachers during the course of the two-week training. In the last two days of training, the subject-matter supervisors of the Local STEM Units were invited to observe the teacher training to be more familiar with the type of work that the teachers do.

AWP 2.A.3: Fab Lab Manager Training: Support the establishment of Fab Lab PLCs and train the best Fab Lab managers as leaders to support and lead the training of Fab Lab managers.

A Fab Lab training was conducted by the STESSA Experts in 2 phases. In the first phase, described hereunder, all fab lab managers received skill enhancement training (AWP 2.A.3); while the second phase, described later in the document (under AWP 2.B.b.6), focused on the training potential trainers.

Phase one: A two-week training of fifteen fab lab managers was conducted for two purposes: (1) to further develop their skills; and, (2) to identify a group of potential fab lab trainers, consisting of five individuals to receive advanced training and be trained as trainers.

The training of the fab lab managers mostly focused on Fab Lab management, maintenance of fab lab equipment, and troubleshooting. It aimed to ensure that the network of fab lab managers can be self-reliant in terms of establishing an internal support system that can deal with a wide variety of challenges that they face regularly.

The most important achievement of this training was the development of the abilities of participants to deal with complex tasks through co-learning, researching, and collaborating to find solutions for themselves.
The U.S. trainers introduced the participants to the concept of Free and Open Source Software (FOSS) and got them initiated in the FOSS ecosystem. Participants had the opportunity to discuss challenges and propose solutions for managing Fab Labs, including maintenance of the machine, keeping the inventory organized and up to date, managing the people flow, and managing the lab layout and workflow. By the end of the training, the training experts were able to identify five potential fab lab trainers, who will be ready to receive a series of training as trainers in the coming months.

AWP 2.A.4.(a, b and c): English Language Training in Schools: Summer Camp/orientation for new students, Review and improve summer camp plans to improve their effectiveness and provide refresher training of trainers in all STEM governorates.

A pre-summer camp preparation meeting was held on the 29th of August, 2019 to cover two fundamental objectives; 1) reviewing two ToT Agendas (which took place on the 1st and 2nd of September) and Leaders Orientation (which took place on the 3rd of September), and 2) discussing the required modifications for refining and strengthening the summer camp e-STEM and Leadership teachers guide. The suggested modifications were based on the analyses of the two surveys (teachers and students) conducted at the end of the 2018 summer camp. Along with the STESSA team, few supervisors, the English Language Teaching (ELT) counselor, teachers, and a STEM Schools principals were invited to review and make core changes focused on the following points:

- Replacing the final English assessment with students’ presentations in the last two days of the camp.
- Adding more active learning activities.
- Adding more sessions and materials on presentation skills as they are highly needed as per the students’ and teachers’ feedback.
Summer Camp ToTs Training:
A two-day orientation was held for the ToTs (English language supervisors) on the 1st and 2nd of September, 2019 for two purposes: orienting the supervisors with the Summer Camp activities and changes made in the teachers’ guide, and assisting them in becoming confident in facilitating the Summer Camp activities. The MoETE English General Supervisor facilitated the training sessions in preparation for the Ministry personnel to take responsibility for the coming training. The first day was a general orientation on the importance of the Summer Camp for newly enrolled students, during which discussion took place about the attributes of a successful STEM teacher, as well as an introduction of the e-STEM and highlighting its significance as an essential part of the English component in the summer camp. During the 2nd day, a new activity was introduced to reinforce the STEM philosophy of integration, collaboration, and social learning. Later, the Teacher’s Guide was shared with the supervisors and a thorough discussion was conducted on each activity particularly the new and modified ones. Further, several Visible Thinking routines were modeled as well as other activities that might be challenging. Moreover, an in-depth analysis of how to apply the modified presentation rubric took place.

1 Visible Thinking is a flexible and systematic research-based conceptual framework, which aims to integrate the development of students’ thinking with content learning across subject matters.
School Leaders Orientation Day:
A summer camp orientation for the school leaders was held on the 3rd of September, 2019. Participants have been oriented with the summer camp overall objectives and informed of the changes made to the Summer Camp English and Leadership Teacher’s Guide. Moreover, a discussion took place on their roles as leaders before, during, and after the summer camp. Participants were introduced to the e-STEM online portal and its importance in the summer camp.

AWP 2.A.6: Professional Development System for Local Governorate Supervisors:
During the reporting period, the STESSA project organized a two-week training for governorate-level/Local Supervisors. The supervisors were first nominated by the MOETE science and mathematics counselors’ offices. Through the Professional Academy for Teachers (PAT), the nominated supervisors conducted English language and content exams. The final selection of supervisors was based on their exams’ scores. STESSA U.S. Experts reviewed and revised the training manuals to reflect the needs of the STEM schools, and delivered the training to the local supervisors.

In the first week of training, 38 English language and STEM subjects’ local supervisors attended the training. The training provided them with an overview of STEM education concepts and philosophy, and the supervisor’s role in supporting STEM School teachers through observation, coaching, mentoring, and providing them with constructive feedback. The training introduced the supervisors to curriculum design, supervisors’ responsibilities, introduction to curriculum coaching, managing classrooms, formative assessment, key strategies in daily lessons and capstone project.
The second training week focused on training supervisors on the classroom observation survey (COS) that they will use to do classroom observation, lesson planning, and practical teaching and learning. In the last two days of the training, the supervisors visited El Obour school to observe STEM teachers during deep dive curriculum training as they were developing lesson plans and doing lab practical work.

On the week of 31st August, another group of 36 local supervisors (Group 2) received the training that was provided to Group 1 supervisors. They also attended the deep dive training of STEM teachers in Maadi STEM school.

AWP 2.A.9: Capstone Evaluation Capacity: Assist the STEM Unit to increase the number of trainers and graders of Grade 3 Capstone Journal and portfolio

STESSA continued to build the capacities of capstone challenge design and journal item writing teams during the reporting period.

The project expert provided a three-day on-the-job training and supported the development of the Capstone challenges for the three grades. Through STESSA’s support, the capstone teams created a database of over 100 challenge ideas to meet the needs of the schools over the coming years.

Furthermore, STESSA conducted a two-day workshop to strengthen the skills of the Journal item writing group. STESSA’s experts helped the Journal item team members through reviewing the questions and improving the content and English writing of the items. To sustain the qualitative review of the items, STESSA experts helped the STEM Unit to identify and train a local English specialist from this design team to be responsible for reviewing and correcting the language of the item on an ongoing basis.
2.B- Systemic Strengthening Activities for Sustainability:

b- School level expansion and sustainable STEM schools across Egypt activities:

AWP 2.B.b.1: ToT Pipeline:

STESSA continued to work with PAT to help to expand the ToT pipeline. During the reporting period, PAT put an advertisement on its website, inviting potential trainers to apply and submit their personal information to their governorate-based local branch of PAT. More than 500 potential trainers have applied, and PAT is reviewing their credentials to exclude those who do not meet the selection criteria and preparing for testing their English language skills and content knowledge.

AWP 2.B.b.2: Ensuring Fidelity of Implementation of the Curriculum:

To ensure the fidelity of STEM curriculum implementation, STESSA conducted a one-week design studio workshop for both Humanities and STEM subjects, along with CCIMD representatives, Local supervisors, subject-matter counselors, STEM Unit, and teachers. The main purpose was to ensure the curriculum is aligned with the revised MOETE learning outcomes, to enhance curriculum integration across STEM and humanities subjects. A group of the faculty members from the four universities targeted through Component 1 were invited to attend the workshop as observers to learn about STEM school’s curriculum development.

The participants, with the help of U.S. experts, reviewed the sequence of learning outcomes and the degree of integration among subjects.

Also, the project experts assisted the participants to review the Lab Manuals of different STEM subjects, update them and add new experiments and activities in light of the curriculum modifications made to improve integration and align learning outcomes.
AWP 2.B.b.3: School Leadership Improvement:

Jointly with the STEM school leaders, STESSA conducted two one-day workshops to help them thinking about the development of the Principal evaluation tool, STESSA’s technical experts reviewed the principals’ attempts and developed a three-phased Principal Evaluation Tool. This tool was shared with MOETE representatives, who work on schools’ monitoring and evaluation. It was also shared with the STEM Unit, school principals and deputy principals, governorate, and district-level administrators who provided feedback and suggested edits.

The project team integrated the suggested modifications and prepared to obtain the Ministry’s approval in preparation to pilot its implementation in the next quarter.

AWP 2.B.b.5: Teacher Selection Improvement:

During the reporting period, STESSA continued to help the MOETE improving the selection process of science and mathematics teachers for the mainstream schools. At the MOETE’s request, STESSA has provided PAT with science and mathematics test items, that are aligned with the STEM conceptual content knowledge to support the selection of new teachers to work in public schools.

AWP 2.B.b.6: Fab Lab Management Assistance:

Item 1: Train a cadre of Fab lab trainers.

Phase Two of Fab Lab training targeted the five of the school’s lab managers who have the potential to become trainers. These potential trainers received one week of training on advanced embedded programming.

They demonstrated an understanding of the limitations of proprietary software and the advantages and purpose of the free and open-source software. After a brief introduction, many resources were shared with the participants so that they can continue learning for themselves.
The training of trainers was successful in meeting its objectives. There was strong enthusiasm from the group to learn more. They demonstrated a combination of problem-solving skills, social skills, and a great attitude required to be an effective trainer.

**Spreading STEM outside the STEM high school activities**

2.B.b.19: Based on the survey conducted earlier in the year to seek the feedback of teachers and supervisors on the scientific research outreach, and the virtual learning of English language (e-STEM) in middle schools. The survey revealed that while the materials and activities were clear and adequate, there is a need to develop more activities and resources. Some of the teachers expressed the need for more training in activity development and implementation. Also, many students showed notable interest in the outreach learning method for its research-based and practical nature. Accordingly, the STESSA team conducted two meetings with the Science and English Counsellors during the last quarter to plan for the expansion of these activities. In terms of science, STESSA agreed with the Science Counsellor to do the training for approximately 600 trainers from all governorates to expand the use of the scientific research outreach activities. In terms of e-STEM, the English Language Counsellor has agreed to collect feedback about its pilot implementation from teachers and supervisors and provide STESSA with feedback and recommendations during the next quarter.

As mentioned in the last Quarterly Report and this report under 2.B.b.5, the MOETE requested STESSA’s assistance to spread knowledge and skills outside STEM high schools through using STESSA’s expertise in developing science and mathematics test items, used to assess the content knowledge and skills of STEM schools’ candidate teachers, to help the MOETE expanding the use of this type of testing to support the selection of new teachers for public schools. STESSA’s home and field offices are preparing a plan for providing the necessary support for this new reform initiative, jointly with the U.S. testing experts and Component 1 partner universities.
3. Monitoring and Evaluation:

STESSA continued to support the STEM Unit through creating monitoring and evaluation instruments and system to develop an effective M&E system and methodologies. During the reporting period, STESSA simplified the Classroom Observation Scale (COS) and shared it with the STEM Unit members, School principals, academic deputies, and teachers. Planning for conducting a baseline study of STEM teachers’ practices at the classroom level, using the revised COS, is underway. Also, STESSA has developed a school Principal Evaluation Tool. The draft was shared with the principals, academic coaches, and the STEM Unit. Their feedback will be used to finalize the development of the tool to be used in the second semester.

Assessment of the Current Status of Progress Under the Contract

- Revised the Results Framework based on USAID’s feedback and submitted it to USAID for review.
- 21PSTEM and its partner organization WEI, have collaborated to review and update the M&E manual to document STESSA’s standard and custom indicators, the overall M&E processes, and procedures, including but not limited to data collection, means of verification and analysis, M&E data collection tools and instruments, roles and responsibilities, etc. the draft M&E manual will be finalized and submitted to USAID in the next quarter.
- Preparation for conducting a baseline survey on STEM Teacher performance is underway. STESSA team has developed and finalized the Classroom Observation Tool and survey methodology. The survey will be conducted in collaboration with the STEM Unit and local subject-matter supervisors in November 2019.

Component 1:

- Supported Egyptian partner universities to finalize the by-law of the STEM graduate-level diploma tracks, based on the ESC feedback and recommendations. The by-laws were approved by the ESC. During the reporting period, the Higher Education
Ministerial Decree was issued for Zagazig University. The other three universities, Ain Shams, Masoura and Assuit are in the process of obtaining the required endorsements for the purpose of obtaining similar Ministerial Decrees.

- Conducted a series of workshops to train the Egyptian faculty members who worked on the design of the STEM Diploma syllabi, and those who will be engaged in teaching the Diploma courses.
- Also, conducted Design Studio workshops for Egyptian and U.S. faculty members who jointly designed the Diploma syllabi for both tracks.

Component 2:

- Supported Professional Learning Communities (PLCs) through modeling group discussions and problem-solving and conducting a series of virtual PLCs for school leaders.
- Supported the STEM Unit to review the learning outcomes and conduct a survey to collect teachers’ feedback to enhance the fidelity of curriculum implementation.
- Provided the STEM Unit with technical assistance to improve and update the training manuals.
- Supported the training of trainers and monitored the implementation of the summer camp.
- Supported the STEM Unit to the summer 2019 PDI for the novice, developing, and experienced teachers, including the training of trainers.
- Trained the fab lab managers in all STEM schools and trained local supervisors.
- Supported the STEM Unit capstone leaders to review and improve the Journal grading system for grade 12 and the training materials based on the received feedback.
## Progress Made in Achieving Performance Results and Indicators

### Main GOAL: STEM Teacher Education and STEM Schools work as a single high-quality STEM Education System.

### Component 1

#### Outcome 1: High-Quality STEM teacher education programs sustained at undergraduate and graduate levels

<table>
<thead>
<tr>
<th>Standard Indicators</th>
<th>Level of Achievement</th>
<th>Annual Target</th>
<th>Actual Quarter Jul–Sept 2019</th>
<th>% of Target</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES.2-1 Number of host country tertiary education institutions receiving capacity development support with USG assistance (standard indicator)</td>
<td>Output</td>
<td>5</td>
<td>4</td>
<td>80%</td>
<td>The 5th University (Menia) Identified, waiting for STEM School Launching.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance Indicators</th>
<th>Level of Achievement</th>
<th>Annual Target</th>
<th>Actual Quarter Jul–Sept 2019</th>
<th>% of Target</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of faculty members in targeted tertiary education institutions trained with USG Assistance. (Custom Indicator)</td>
<td>Output</td>
<td>275</td>
<td>193</td>
<td>70.2%</td>
<td># of faculty members trained in summer (July – September 2019).</td>
</tr>
<tr>
<td>Number of Academic courses designed with USG assistance (Custom Indicator)</td>
<td>Output</td>
<td>24</td>
<td>40</td>
<td>166%</td>
<td># of Academic Courses development in summer (July – September 2019).</td>
</tr>
</tbody>
</table>

### Component 2

#### Outcome 2: Strong STEM Schools System institutionalized

<table>
<thead>
<tr>
<th>Performance Indicators</th>
<th>Level of Achievement</th>
<th>Annual Target</th>
<th>Actual Quarter Jul–Sept 2019</th>
<th>% of Target</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES.1-6 Number of primary or secondary school educators who complete professional development activities with USG assistance (standard indicator)</td>
<td>Output</td>
<td>648</td>
<td>490</td>
<td>75.6%</td>
<td>Teacher training has been implemented during the summer break. (from July to September 2019).</td>
</tr>
<tr>
<td>ES.1-4 Number of learners in secondary schools or equivalent non-school based settings reached with USG education assistance (standard indicator)</td>
<td>Output</td>
<td>3,200</td>
<td>2,766</td>
<td>86%</td>
<td>This represents the number of learners in all existing schools during the academic year 2018/2019</td>
</tr>
<tr>
<td>ES.1-12 Number of education administrators and officials who complete professional development activities with USG assistance (standard indicator)</td>
<td>Output</td>
<td>165</td>
<td>119</td>
<td>72.1%</td>
<td>Administrators’ and Officials’ training has been implemented during the summer break. (from July to September 2019)</td>
</tr>
</tbody>
</table>
### Project Management

On September 3, 2019, the COR visited the training site and observed the training of faculty members in course design. He also visited the training of local subject matter supervisors and observed the training of English language trainers. These trainers will train the teachers who will engage with the implementation of the summer camp for the newly enrolled students.

After the visit to the training site, the COR met with the COP to discuss project updates during the previous two months. The COP provided the COR with an overview of training activities, particularly the following:

- **Component 1**: Diploma Courses development; and, Design Studio for curriculum
- **Component 2**: Design Studio on curriculum integration, Training of trainers, training of novice, developing and experienced teachers, Fab Lab training, leadership training, Summer Camp training

The COP provided the COR with an update on the status of the Diploma program and informed him that the Ministerial Decree for Zagazig FOE and the progress made towards having the Ministerial Decree issued for Ain Shams, Mansoura, and Assiut

In terms of the number of students who applied to enroll in STEM schools in the school year 2020/2021. It was “8,798 applicants”. The final number of new students accepted in the 15 STEM schools nationwide is “1,853 students”.

### Output and Outcome

<table>
<thead>
<tr>
<th>ES.1-13 Number of parent-teacher associations (PTAs) or community-based school governance structures engaged in primary or secondary education supported with USG assistance (standard indicator)</th>
<th>Output</th>
<th>Baseline</th>
<th>Output / Baseline</th>
<th>Baseline</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>14</td>
<td>93%</td>
</tr>
</tbody>
</table>

**Note:** the annual targets for the above indicators have been set following the project’s year (May 2019 → April 2020).
Challenges

1. The delay in finalizing the approval process of the Diploma bylaws at Ain Shams, Mansoura, and Assiut Universities: Despite the high level of commitment of the three universities and the ESC to implement the STEM Diploma programs for teachers and educational leadership, the approvals of the University Councils are still in process. Once completed, they will be submitted to the Minister of Higher Education to issue the necessary Ministerial Decrees needed to start implementing the Diploma programs.

Success Stories

On September 30, 2019, the Faculty of Education in Zagazig University held an orientation workshop for the new USAID-funded STEM Diploma programs for teachers and school leadership. The event was attended by the Vice President of Zagazig University, the FOE Dean and Faculty members, the MOETE First Undersecretary, the Chair of the Teachers Syndicate, the Principal of the STEM School in Sharkeya governorate, STESSA team, and private schools’ representatives. Also, the FOE Dean invited more than two hundred teachers to participate in the event and learn about the Diploma programs.

In the opening remarks, the Dean, Professor Abdel Monem Nafei, and faculty members provided an overview of the program and explained the efforts they exerted to get the necessary approvals and the Ministerial Decree needed to start implementing it so quickly. They were so proud to be the first FOE and University in Egypt to implement the STEM Diploma programs. The STESSA team presented the history of STEM education in Egypt and provided an overview of the STESSA purposes and activities, particularly as to relate to graduate-level Diploma programs. The University Vice President, Professor Mervat Askar expressed the appreciation of the University to USAID for introducing the STEM Diploma programs and confirmed the University's
commitment and continued support to them. The FOE Dean did an excellent job explaining the program requirements to the invitees and encouraged teachers and principals to participate in the Diploma programs. As a result, the Chair of the Teachers Syndicate was very encouraged and announced that the Syndicate will support the teachers and the principals to participate in the programs by providing them with partial funding or helping them to pay the Diploma fees in installments. The private schools’ representatives were also encouraged and promised to cover the expenses of private school teachers to participate in the Diploma program. By the end of the event, approximately sixty teachers and principals decided to enroll in the Diploma tracks.
قرار وزاري رقم 9/2019
 بشأن إجراء تغيير بالمناقشة الداخلية بكلية التربية جامعة الزقازيق
(مرحلة الدراسات العليا)

وزير التعليم العالي والبحث العلمي ورئيس المجلس الأعلى للجامعات

بعد الإبلاغ على القانون رقم 19 لسنة 1972 في شأن تنظيم الجامعات والقوانين المعمول به.

واعتنق قرار رئيس الجمهورية رقم 819 لسنة 1975 بإصدار اللائحة التنفيذية لقانون تنظيم الجامعات والقرارات المنكوبة به.

واعتنق القرار الوزاري رقم (2367) بتاريخ 12/9/2019 بشأن إصدار اللائحة الداخلية (مرحلة الدراسات العليا) بكلية التربية جامعة الزقازيق والقرارات المنكوبة به.


وعلى قرار المجلس الأعلى للجامعات موافقته بتاريخ 30/9/2019.

قرر

المادة الأولى

وبيانات قانونية:

1. برنامج البذور المائية: إعداد القواعد التربوية لمدارس التربية المائية في الدراسات العليا.
2. برنامج البذور المائية: إعداد مدارس التربية المائية في الدراسات العليا.

التأسيسات: (رياضيات، فيزياء، كيمياء، جيولوجيا، عربية، إنجليزية، فرنسية، إنجليزية، جرافيكس، العلوم الاجتماعية، علم النفس).

المادة الثانية

تتحقق الدراسة وتحقيق المعايير الخاصة بالبرامج المحددة بالدراسة المهنية (مرحلة الدراسات العليا) بكلية التربية جامعة الزقازيق.

المادة الثالثة

على جميع الجهات المختصة بمتابعة هذه الآلة.

وزير التعليم العالي والبحث العلمي ورئيس المجلس الأعلى للجامعات

(أ/ خالد عبد الغفار)
Annex (2):

Courses developed for the Diploma Tracks

July 8 through September 5, 2019

STEM Leadership Professional Diploma Program Courses

1. Foundations of STEM Education
2. English Language Readings in Leadership (1 & 2)
3. Institutional Performance Assessment
4. Action Research
5. Practicum (1 & 2)
6. Effective School Communication
7. Digital Culture and Knowledge Society
8. School Strategic Planning
9. Leadership Capstone Project
10. Human Resources Management
11. Educational Supervision and Coaching
12. Contemporary Theories in Leadership and their Pedagogical Implications
13. Management of Change
14. Psychology of Leadership

STEM Teacher Professional Diploma Program Courses

1. Foundations of STEM School Education
2. English for Specific Purposes (1 & 2)
3. Instructional Technology for STEM Schools
4. Curriculum and STEM teaching and learning Strategies
5. Practicum (1 & 2)
6. Assessment and Evaluation for STEM Schools
7. Capstone  
8. Scientific Thinking  
9. Action research  
10. STEM schools and Social Issues  
11. Education and Quality of life  
12. Emotional learning and self-regulation  

**Advanced STEM Content Teaching**  
13. Physics (1 & 2)  
14. Math & Mechanics (1 & 2)  
15. Chemistry (1 & 2)  
16. Earth Science (1 & 2)  
17. Biology (1 & 2)