QUARTERLY REPORT FOR

INnovations in Technology-Assisted Learning for Educational Quality Project (INTALEQ)

A Global Development Alliance Project

Quarter 4 FY 09 Report for the INTLALEQ Project (July-September 2009)

Prepared and Submitted by Education Development Center, Inc

EXECUTIVE SUMMARY

The quarter was busy and very productive. Highlights of the quarter included the M&E findings related to teachers and students, the launch of the INTALEQ "Curriki" portal and the launch of the project basic training activities in Mukalla, Ta'iz and Aden.

Monitoring and evaluation reports were finalized this quarter. Student post-test data were analyzed along with pre-test data that had been collected at the beginning of the semester to produce a report on project impact after a full semester of work in the schools. The report was for Sana'a schools only since the project was piloted in Sana'a only during the second semester of the 2008-2009 school year. The results of the report were very positive and on average students in INTALEQ project schools demonstrated learning gains of between 7 and 9 points higher between pre and post tests than their counterparts in control schools. Indeed, over 60% of students in INTALEQ schools demonstrated learning gains of at least 7 points higher than their control school counterparts. Only about 10% of students in control schools could match those gains.

In addition, 89% of teachers used the digital learning objects on a regular basis. This was documented through the analysis of data collected last quarter, including teacher interviews, teacher journals and teacher lesson plans.

The other major activity of the quarter involved the delivery of the INTALEQ basic teacher training package to teachers and supervisors in the three project governorates of Mukalla, Ta'iz and Aden. A day of this training was devoted to an orientation on how to use the newly launched INTALEQ portal (the "Curriki" model). In addition, teachers in Sana'a received a "refresher training" and the portal training as well. One hundred and sixty three teachers and administrators were trained and seven MOE officials from the educational technology and aid department in the MOE were trained as trainers on the portal. The portal is open to INTALEQ teachers and other MOE officials who have registered for an account. On it, teachers can exchange information and (most importantly) lesson plans. The MOE administrator along with the EDC training manager monitor the site to make sure content is appropriate and accurate.

The project encountered difficulties over the issue of incentives for the MOE. Incentives are not being paid and the MOE's role in the project, as contributing the labor of MOE employees, notably from the Department of Educational Technology and Aids, was clarified during the quarter. The Memorandum of Understanding signed by all of the partners lays out the commitments of each, including the MOE. Unfortunately, the MOE had a copy of the MOU translated for themselves into Arabic that did not accurately translate the contents of the MOU. This has been corrected and a correct translation distributed.

The project held its second advisory meeting in Sana'a. Due to a last minute change in date to accommodate the Minister of Education, no one from Al Awn was able to attend. Unfortunately, in the end the Minister was also unable to attend. Other partners discussed the above issue of MOE incentives, the scope of the project in terms of number of grades and schools and the project budget. MOE officials wanted to see the project expanded, wanted increased capacity to develop their own digital learning objects and wanted more resources for the MOE, especially in the form of equipment. Discussions centered around these stated desires and the original goals and scope of the project. All parties agreed they would like the project continued.

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ACRONYNMS and ABBREVIATIONS

EDC	**Education Development Center, Inc.**
ERDC	**Education Research and Development Center**
HSA	**Haile Saeed Anam Group**
MOE	**Ministry of Education**
MOU	**Memorandum of Understanding**
USAID	**U.S. Agency for International Development**

I. Overview

This report covers the period of July – September of 2009. This quarter saw the extension of project activities to the three additional governorates of Ta'iz, Mukalla and Aden. While the project has been liaising with the DGs in each governorate previous to this quarter, in preparation for start up in these governorates, this was the quarter where the training activities began on the ground in each site. This quarter also saw the launch of the INTALEQ "Curriki" portal with space for teacher to liaise with each other and share information, lesson plans and ideas. .

This overview presents a brief summary of the highlights that occurred during each month of the quarter. The report is then organized in terms of technical domains—Digital Content Development, Dissemination and Capacity Building as well as Project Administration—and further details on both accomplishments and challenges are shared in those sections. Next, the report contains a section on Results Reporting. In addition to reporting on expected results named in the proposal, we also report on output indicators in this section as well.

At the end of this section, we have included a summary of the project progress against the workplan. Appendix A contains the actual workplan. The activities in the workplan that have been completed in this past quarter are highlighted in blue, the activities completed in past quarters highlighted in green and the activities still to be completed marked with an X but no color fill.

Finally, there are several additional appendices attached to the report to provide further detail on the quarter's activities and results.

July:

The month of July was devoted to finalizing the student assessment reports (one from the INTALEQ-administered student tests and another smaller one from monthly teacher tests given to students) as well as to preparing for the training scheduled for mid-August.

First, regarding the INTALEQ-administered assessment, Dr. Fouad Abdelkhalick, an EDC teacher training and evaluation expert who is also professor in the school of education at the University of Illinois at Urbana Champagne and a native Arabic speaker, did the data analyses and produced the report tables and data interpretation sections. Helen Boyle, INTALEQ's project director wrote the rest of the report (background, sampling, school selection, test preparation and administration and correction) and edited the two parts together into a complete report. Although the report was already circulated to partners in July, it is attached to this document in Appendix B.

Second, EDC finished analyzing the monthly student test data in the four target subject areas collected from teachers for the academic year 2008-2009. The data were only collected from project schools not control schools since the project decided to examine the data for a change in average student performance between the first semester (without the digital learning objects and training) and the second semester where the teachers received training and the students used the digital learning objects. Results were not as dramatic as the INTALEQ student achievement test results but did show a statistically significant gain in average scores between the first and second semester among INTALEQ students. EDC data analyst Dr. Fouad Abd-el-Khalick felt that the data could be mined for even more insights but the project held off on doing this in the current quarter as it would have taken up a great deal of staff field office time to disaggregate all of the student test scores across the semester and enter it in spreadsheets for further analysis. In addition, further analysis would require more time of Dr. Abd-el-Khalick and the project had not planned for this additional expense. Staff decided to wait until the final semester of the project to gauge whether the budget can bear the additional cost and the field staff can find the necessary time amongst their other project tasks. As a result, the initial report was not circulated during the quarter; however it is appended to this document. (See Appendix C).

Third, in terms of the training preparation, Dr. Rachel Christina, a teacher training expert and fluent Arabic speaker in EDC's home office, and Ms. Hala Taher, an EDC casual employee based in Jordan, reviewed the training materials from January/February, looked at the training evaluations and consulted with the trainers, especially Dr. Robert Spielvogel, in order to revise the materials. The materials were revised in Arabic and English. The INTALEQ field office staff were busy arranging the training dates and confirming trainers and venues with the Ministry of Education's localization team. In addition, Mr. Abdechafi Boubkir and Dr. Robert Spielvogel consulted on the development of a one-day training for teachers in how to use the new INTALEQ ("Curriki") portal.

August:

August was devoted primarily to the execution of the training events in all four sites. The **Sana'a** teacher and supervisor training took place from August 10 – August 13, 2009 at Al Sabeen School in Sana'a. The training in **Mukalla** occurred from August 8 to August 12, 2009. Training took place in the Institute of Commerce hall in there. The training in **Ta'iz** took place from August 15 to August 19 2009 in the Haile Saeed Foundation building. Lastly, the training in **Aden** took place from August 15 to August 19, 2009 in the Lebanese University Hall. A total number of 163 educators were trained across the four governorates. Additionally 7 members of the Educational Technology and Aids Department in the ministry were trained to train others in using the INTALEQ "Curriki" portal.

Also in August, the second INTALEQ Advisory took place. The meeting was scheduled to be held in Sana'a on August 5th; this had been agreed upon at the last Advisory Committee meeting in Ta'iz. However, His Excellency the Minister requested the date be changed to August 9th. This was done, although it meant that Dr. Adel Bahameed of the Al Awn Foundation could not attend. Unfortunately, the Minister was also unable to attend on the 9th. The meeting was dominated by discussion of the budget, as the MOE wanted to see a greater portion of the project budget directed toward procuring resources for the MOE and/or paying MOE employees for time worked on the project. The MOE also wanted the scope of the project enlarged immediately. All parties did agree that they would like the project to continue and expand.

Project partners EDC and USAID did hold a meeting with the Minister in August as well, as a follow up to the advisory committee meeting. He wanted to receive a letter from the partners stating that they were in agreement on the budget as it is and stating what EDC's "percentage" is. By this we assume he meant overhead on direct costs. USAID asked Al Awn to send this letter, as the largest INTALEQ funder. Additionally, at Al Awn's request EDC submitted a draft budget that costed out some major lines for project expansion. The Al Awn board is considering this submission. EDC also submitted a request for a no-cost extension to the Al Awn Foundation, as it had done with USAID the previous quarter. EDC's agreement with Al Awn was scheduled to terminate on the same day as EDC's agreement with USAID—September 29, 2009. However, given the workplan changes implemented in the second quarter, it was agreed that the project would continue to operate in the first semester of the 2009-2010 academic year, ending at the end of January 2010. USAID already approved this request. Al Awn has indicated that they intend to do so as well.

September:

Since it was Ramadan, work slowed down a bit in September. Test development and finalization of the digital learning objects for semester one, via a "validation" meeting by the whole MOE localization team were the projected activities. However, the localization workshop was pushed back to October due to disagreement among the localization team on which week to select for the meeting. Test development occurred as planned. Likewise, the project team profited from the slight slowdown at the MOE in the month of September to take time to finalize several translations that were in the works but had not been completed, including the last quarterly report, meeting minutes of several August meetings held with the MOE and the advisory committee, the student evaluation report from the last semester and perhaps most importantly, the MOU signed between all of the INTALEQ partners. The MOE had had this latter documented translated into Arabic but, in the course of the advisory committee meeting, it was discovered that the MOE's translation was inaccurate and incomplete. Hence, EDC agreed to have it retranslated in order to prevent future misunderstandings about the obligations of all parties within the project. In

addition, the letter the minister requested was prepared in September and each partner wrote to Al Awn stating their concurrence with the language of the letter to be sent to the Minister. Finally, all of the funding partners agreed that a rebudget was not possible or desirable at this stage of the project.

II. Progress and Challenges in Programmatic Domains

A. Digital Content Development

The fourth quarter was busy in the area of digital content development. Although work on the first semester 10th grade learning objects began in June, it was slowed down by the MOE's demands that they be paid for the work. The work picked up speed in August and continued, albeit at a slower pace, in September after the MOU was clarified. The MOU states that the MOE is to contribute the labor to the digital materials localization process and also to the monitoring and evaluation process.

1. Accomplishments

It was agreed between EDC, Intel and the MOE in the last quarter that the MOE would endeavor to select items (largely from the Egyptian digital content) that would not need extensive adaptation for use in Yemen, both for time and budgetary reasons. While this notion was revisited during the INTALEQ Advisory Committee meeting in August by the MOE, which stated that it wanted to develop materials from scratch or localize materials for every lesson in the curriculum, the original decisions was ultimately upheld as the project does not have the mandate nor the resources to do otherwise. In addition, Intel also expended the majority of its budget on the second semester localization and adaptation process. For this reason, and because the MOE team did not begin the localization until June, all parties finally agreed to select items that were not in need of extensive changes. The localization team felt that there were many objects in the Egypt skoool.com collection that would work very well for math and science instruction in the 1st semester of 10th grade, with minimal changes.

Happily, some of the 1st semester digital learning objects were ready to use in the teacher trainings, which were held during the second and third weeks of August. The localization was less labor-intensive this time around as both the localization team, EDC and Intel knew better the process and what would be required to smoothly adapt the learning objects to Yemen.

2. Challenges

The digital materials localization team put in a lot of work during the first two quarters of the project, in order to have the 2nd semester 10th grade materials ready to use in February of 2009. As we began the process of looking at the 1st semester materials, the localization

team wanted to discuss the option of greater compensation for their work as it involved much overtime beyond their normal duties. This issue was raised in the meeting between the implementing partners in May and the MOE and EDC agreed to look at the issue and consider ideas to provide the digital materials localization team with more incentives.

While the issue was examined, the MOU between the partners, including the MOE, states that the MOE's contribution to the project is the labor of its staff in both localizing the materials and in carrying out the M&E activities. Under USAID regulations, it is illegal to pay MOE officials for work that is ostensibly part of their normal duties. Hence, there was no way to pay, per se, for the actual time the MOE officials spent in localization. The localization team insisted that they should at least be paid for overtime. This was raised at the Advisory Committee Meeting on August 5th, 2009. Mr. Ali Al Haimi stated that he had detailed records of time worked (and overtime worked) by the localization team. He was asked to provide this information and this request was re-iterated during the meeting with the Minister in August. To date, no documentation to this effect has been provided to the project, from which to consider any sort of overtime compensation.

However, in recognition of at least providing some incentives, including some concentrated work time (necessary to finish the task and to get the 12 localization team members on the same page at the same time), a change of venue and some allowable per diem, the MOE and EDC agreed on a retreat format for the entire localization team to review and validate the set of 1st semester interactive digital learning objects. This event is scheduled for after Ramadan, in the next quarter. Likewise, EDC will look for opportunities to provide more capacity building opportunities within the MOE, as feasible within the project budget and mandate. However, these opportunities will more likely occur in the realm of portal management and M&E than in the realm of digital content development.

B. Dissemination Systems

The 4th quarter has focused largely on getting the open source platform, which was translated into Arabic, tested and up and running on the MOE site. This was critical so that the portal could be used in the August trainings by the teachers.

1. Accomplishments

Given the difficulties that Curriki ran into with the translation of their platform (discussed in the Second Quarterly Report), it was a major accomplishment for the project to marshal the resources in-house (i.e. unpaid resources within EDC) to translate the platform (during the last quarter) and to have it up and running for the August teacher training.

In July, the platform was tested and revised and the training materials for the teachers on how to use the platform were developed in Arabic. The platform uses Drupal software and

a simplified, more streamlined model of Curriki for the teachers to use. It was introduced to all INTALEQ project teachers, as well as principals and supervisors in the August teacher training and they were shown how to use it. Prior to introducing it to teachers, EDC trained a core group of MOE officials from the localization team to use the portal and to train others on how to use it.

2. Challenges

The major challenge of the quarter was working out the kinks in the platform prior to and after its launch in August. Curriki has not moved on securing the resources to make good on its commitment to translate their platform so the current EDC-created Drupal platform will have be the major portal mechanism for the foreseeable future. In some ways this is not bad as the Drupal platform is more flexible than the Curriki one. However, this was a bit of a disappointment to EDC and begs questions about Curriki's ongoing role in the project. Curriki has been going through a reorganization and change in focus. Within this context, Curriki's international work has been deemphasized. Curriki has approached EDC about simply taking over this "branch" of Curriki and EDC is considering the possibility.

C. Capacity Building

Capacity building was a major focus of this quarter as the project carried out its professional development activities for teachers, principals and supervisors in the three new project governorates (Mukalla, Ta'iz and Aden) and offered a refresher-training to teachers in Sana'a.

1. Accomplishments

The **Sana'a** teacher and supervisor refresher-training took place from August 10 – August 13, 2009 at Al Sabeen School in Sana'a. Also, three first-time INTALEQ training events took place for teachers and principals from the target schools in Mukalla, Ta'iz and Aden in August of 2009. Specifically, the training in **Mukalla** occurred from August 8 to August 12, 2009. Training took place in the Institute of Commerce hall in Mukalla. The training in **Ta'iz** took place from August 15 to August 19 2009. The training took place in the Haile Saeed Foundation building. The training in **Aden** took place from August 15 to August 19, 2009. This training took place in the Lebanese University Hall in Aden. The number of participant trainees was as follows per site:

Sana'a:	39, consisting of 29 teachers, 6 principals and 4 supervisors
Mukalla:	45, consisting of 35 teachers, 6 principals and 4 supervisors
Ta'iz:	36, consisting of 28 teachers, 4 principals and 4 supervisors

Aden: 43, consisting of 34 teachers, 5 principals and 4 supervisors

Total: 163 trainees, consisting of 126 teachers, 21 principals and 16 supervisors

Additionally, 7 staff people within the MOE's department of Educational Technology and Aids were trained in using and managing the INTALEQ portal and in training others in its use. Thus, the total number of trainees this August was **170**.

EDC trained a cadre of "master" trainers in January 2009. This group was drawn from master teachers on previous projects (ILSI and IYHS), university faculty and the MOE. After the January "training of trainers" the master trainers then "apprenticed" during the training of teachers in February of 2009. They participated with international trainers in the delivery of the training program to teachers as a way to both observe and practice what they had learned in their "training of trainers" sessions in January.

For the August training, EDC presented the MOE with a list of the top trainers from the MOE (as ranked by our experts in January) and asked the MOE to assign no more than 4 trainers to each site. (EDC had originally suggested that only 3 would be needed, because EDC's international trainer would round out the group and make 4 trainers; however, the MOE insisted that in some cases, it needed to assign 4 trainers per site, in order to ensure equity among the MOE trainers and make sure all had the opportunity to develop their skills. This seemed very reasonable so EDC agreed. The goal of the "apprenticeship" arrangement is to give MOE trainers the opportunity to develop their training skills and to receive honest feedback on their strengths and weakness, so as to be able to improve over time while ensuring that a highly skilled trainer is in charge of the overall implementation of each training event to ensure quality control. A complete list of the master trainers trained in January 2009 and a list of the trainers from that group used to do training in August 2009 is attached to this report in Appendix D.

Lead trainers included the following individuals:

Dr. Saouma BouJaoude, American University of Beirut and EDC—Mukalla;

Dr. Norma Ghamrawi, Lebanese University—Ta'iz

Ms. Hala Taher, Queen Rania Academy and EDC—Aden

Mr. Abdechafi Boubkir, EDC—Sana'a and Aden

Mr. Abdechafi Boubkir conducted a refresher training and training on using the Curriki website for teachers in Sana'a. The others conducted the full "basic training" for INTALEQ, with the Curriki training piece offered as part of the overall training program in Mukalla, Ta'iz and Aden. Resumes for the four lead trainers are attached in Appendix E.

Training materials were developed in December 2008 by Mary Burns, EDC's resident expert in teacher training and technology integration. She is currently a lead technical design and training expert on EDC's Indonesia project, a 65 million dollar USAID-funded educational initiative focused on innovative teacher development models (including the use of technology) and has worked in Pakistan, India and Egypt among other countries. She also designs and runs courses for teachers and supervisors in the US through EDC's Center for Online Professional Development. Mary Burns put together a four day training program, in consultation with Hala Taher, Robert Spielvogel and Helen Boyle of EDC. The materials were translated in Yemen, supervised by EDC's INTALEQ staff, and edited by Ms. Hala Taher to ensure the translation was accurate and clear. The training materials were then piloted in February of 2009 with teachers from the INTALEQ schools in Sana'a.

Subsequent to the February pilot, the training materials were revised by Ms. Hala Taher and Dr. Rachel Christina (a fluent Arabic speaker and senior project director with EDC, who specializes in teacher professional development and early childhood education as well), in consultation with Ms. Burns. The revised materials were edited, the Arabic translation checked by Ms. Taher and Dr. Christina and then emailed to the lead trainers who would use them in August. Hard copies were printed in Yemen and distributed to the MOE trainers.

Issues addressed in the revision of the training materials included consolidating some of the project based learning sessions in order to leave more time to focus directly on designing and piloting lesson plans incorporating the digital learning objects.

In general, the trainings were extremely well received by the teachers, principals and supervisors. Trainees displayed enthusiasm, interest and commitment over the course of the training period. Issues that arose tended to relate to the individual venues themselves, capacity of MOE co-trainers, level of teacher computer literacy and level of "user-friendliness" of the training manual for the trainers. The Summary Training Report, plus the individual lead trainers' reports with recommendations are attached in Appendix F

2. Challenges

There were several challenges encountered in the implementation of the basic/portal and refresher/portal teacher, principal and supervisor trainings in August. These tended to fall into the areas of venue/facilities, utilizing the training manual, time and teacher computer literacy/teacher transfer.

The facilities in Mukalla were generally good, although the computer lab was spread over two rooms, which was not always ideal for plenary activities. The main room was a bit crowded when all of the teachers were in it at the same time; however, the trainers worked around this and the teachers were very accommodating. A larger problem in Mukalla was

the frequent electricity outages that occurred. The outages not only shut down the PCs but also shut down the air conditioning, leaving the training rooms extremely hot.

The activities contained in the training were generally positively rated by the master trainers from outside of Yemen. There were suggestions to rearrange some, to trim some and to add more practice with using the learning objects into the program. One key point that the master trainers mentioned was that the training manual was too detailed, in places making it harder to follow and use. Recommendations were given for streamlining it and for adjusting some of the activities to allow even more focus on the learning objects.

The MOE trainers (those trained by EDC in January of 2009) were knowledgeable about the topics they had been trained on (and that they were to train teachers on). Mr. Al Haimi of the MOE did have the trainers watch video of the training in January as a means of preparation. Feedback from the master trainers indicated that the local trainers still needed more guided practice to develop into really superb trainers. In general observations by EDC staff supported this assessment. The trainers needed additional practice and coaching in making sessions truly hands on and participatory. They still had the tendancy at times to lecture and to give answers rather than letting teachers work through and solve problems themselves. The master trainers gave the local trainers feedback and debriefed every day as a way to coach and mentor them such that they will eventually be able to assume full responsibility for training new teachers to use the INTALEQ materials and approach.

A key challenge was the issue of teacher transfer in Mukalla. Many teachers who had been trained in computer and internet usage in Mukalla through other Al Awn projects were transferred out of the schools the project selected to work with. As a result, a dozen of the teachers placed in those schools as math and science teachers did not have much background in the use of computers. This issue was raised with the DG and mentioned to Al Awn Foundation representatives. As Mukalla just installed a new DG, it is unclear (probably unlikely) that this decision will be addressed or reversed. Computer training was provided in the form of individual instruction and coaching in the mornings before the full training began. Mr. Akram Sakkaf of Al Awn Foundation and Ameen Al Kaderi of EDC provided this training.

Computer knowledge in Ta'iz was also an issue for teachers and supervisors. Again, the main strategy to address this was to provide tutoring around the hours of the training itself. Activities did take a bit longer to complete due to the teachers' unfamiliarity with the technology. However, most technology learning comes from trial and error and the approach of having the teachers simply learn by doing is generally an effective one.

D. Project Administration

The advisory committee meeting and subsequent meeting with the Minister were the primary administrative focus areas, in addition to simply doing the work to organize and support the discreet technical activities.

1. Accomplishments

The smooth implementation of the four training events (one in each governorate) constitutes the major accomplishment of the quarter. The holding of the second advisory committee meeting, although contentious, was also an accomplishment. The launching of the portal was the most technically complicated accomplishment of the quarter. The portal is operational and in use by teachers, who are posting lesson plans and sharing comments with each other.

2. Challenges

The advisory committee meeting and the attendant discussion around "incentives" for the MOE proved to be the greatest challenge of the quarter. It was clear that despite multiple explanations of the project and the provision of the program description and the workplan in Arabic, MOE personnel did not fully grasp that the central goal of the project is to improve teaching and learning and not supply equipment or training in digital material design or to provide a digital object for every single lesson in the curriculum. During the advisory committee meeting, the MOE put forth requests for more learning objects, for a re-budget of the INTALEQ budgets, for equipment and more MOE capacity building etc. The MOE also expressed a strong desire for "incentives" or payments for the work they did in localizing the digital learning objects.

The challenge in all this is that salary supplements to the MOE is forbidden by USAID regulations. While perhaps the Al Awn Foundation or Haile Saeed would consider these sorts of payments (although both funders indicated they were definitely not in favor of such payments), the MOU signed by the MOE indicated that the work on the digital learning objects and the M&E would be the MOE's contribution to the partnership. As a result, paying for MOE time to do regular MOE work would be a violation of the MOU that all partners signed. Training is the only exception, as the localization team are not trainers in their regular jobs.

The issue of incentives resulted in a meeting with the Minister of Education, who questioned the budget structure and asked for a letter from the partners indicating the level of EDC's percentage of indirect costs on the project. The controversy over the budget calmed down in September when it became apparent that the partners were not going to rebudget.

III. Results Reporting

This section of the report will deal with updating our reporting on achievement of project results. The organization of this section of the report focuses on the major deliverables.

A. Student Assessment

There were no new student assessment activities per se in this quarter. However two strands of activities were underway. First, in September, the project began to develop the pre and post-tests for the 1st semester of 10th grade in the four subject areas. Dr. Said Assaf of EDC drafted instruments and these were reviewed by the MOE localization team and feedback sent to Dr. Assaf. As with the last set of pre-and post tests, the questions were based on the learning objects and on some of the wider topics taught during the semester (as a way to gauge whether new teaching methods are being used even outside of the learning objects). This work was started in September but continued into the next quarter.

Secondly, in late July and early August, EDC analyzed student data collected from INTALEQ 10th grade teachers in the four subject areas. The data were the students' monthly test scores. We compared the average scores in the first semester, before the project was on the ground in the schools (October 2008- January 2009) with the average test score after the project began, spanning the period from February – May 2009. As noted above, the report from this analysis is attached as Appendix C.

Expected Result: Improved student achievement in 10th grade math and science in INTALEQ schools

Target: 60% of students in 10th grade will have improved their scores in math and science after participating in the program.

Results achieved to date:

Student assessment results for students in the Sana'a schools were impressive. On average students in the project schools received scores of almost nine points higher on the post tests than students in the control schools. Gains in all subjects for the project schools were statistically significant and have a confidence level of 95%. Hence, the project did have a positive and substantial impact on students' learning in the target subjects in Sana'a. Likewise, students' average scores on monthly tests rose by a statistically significant amount between the first and second semester of the past school year. This too suggests that the project has added value to the learning process for students. The monthly tests cover a wider range of topics than those covered by the learning objects.

This quarter, EDC is analyzing both the student achievement pre and post testing done by the project and the scores provided by teachers from the monthly tests to ensure that we

can report directly on the target of what percentage of students in INTALEQ schools improved their scores between: 1) the pre and the post test for second semester in comparison to a control group and 2) from the first to the second semester on the monthly tests. We are optimistic the results will be in excess of 60% of students showing improvement.

B. Teacher Performance

There were no new activities related to measuring teacher performance during this quarter as schools were not in session. The project did continue to sift through the data collected from teachers, including lesson plans for the past semester, end of semester interviews and the like.

Result: Grade 10 math and science teachers in INTALEQ schools employ additional digital materials and active, inquiry-based methods for teaching and assessment in their classrooms.

Target: 70% of teachers regularly use digital learning support materials in the classroom with their students

Results achieved to date:

As reported in the last quarter, data indicate that almost all target teachers in the INTALEQ schools have used the digital learning objects. To recap from that report, we are defining regularly as 3 times per month minimum per subject. This would mean that a teacher took his or her class to the computer laboratory once a week for three weeks out of a month. The digital learning objects are meant to be used as part of a larger lesson that the teacher is preparing and giving on the topic of the day or week. They are not "stand alone", hence, if a teacher gets his or her class into the lab once a week for three weeks out of a month, that seems feasible. As all science and math teachers are using the digital learning objects with their 10th graders in the project schools, a student would get to the lab 4 times a week (once per subject) for three weeks out of a month.

Teachers' lesson plans were collected in June were reviewed in more depth in July to see whether the project reached the 70% mark targeted above. Analysis from the teachers' lesson plans and journals indicates that all the INTALEQ teachers in Sana'a have been using the learning station technique very often, and each time they used this technique they would set up the digital learning objects as one of the lesson stations.

Math and biology teachers have been using the LOs at least twice a week, while the physics teachers have been using them once a week for physics and the chemistry teachers have met the "three times a month" threshold. There were 29 10th grade math and science

teachers across the 6 project schools in Sana'a; 9 were math teachers and 20 teach science. Data were collected from 26 out of 29 teachers. (Three teachers did not turn in these materials.) So, 100% of the teachers for whom we have data (26) are using the learning objects regularly in their lessons. Even if none of the three teachers whose data are missing were using the learning objects, the project would still exceed the target of 70% (achieving a usage rate of 89% in Sana'a) of teachers using the learning objects regularly. See Appendix G for a summary of the Sana'a teacher interviews.)

C. Digital Library of Materials

This result area focuses on documenting the finalization of the localized Intel materials but is also broader to encompass the inclusion of other materials that the MOE might locate and establish links to or that teachers might create themselves to share online.

Result: The Yemeni MOE has made a solid start on compiling a library of authentically Yemeni digital materials, keyed to the Yemeni curriculum, which can be used by teachers and students.

Target: 10 Physics, 10 Math, 10 Chemistry and 20 Biology Learning Objects from the Intel skoool.com sites are fully adapted to the Yemeni context for use in 10th grade classrooms.

Results achieved to date:

To date, more than 10 digital learning objects per subject (and more than 20 in biology) have been adapted for Yemen and were used by 10th grade teachers for the 2nd semester of 10th grade in INTALEQ schools. During this quarter (August and September 2009) approximately 40 additional objects were added to the collection, for use in the 1st semester of 10th grade.

D. Ministry of Education Portal

This result will document the creation of the MOE portal and will essentially allow us to determine the level of access and ease of access available to teachers and others in utilizing digital content.

Result: Fully functional portal tailored to Yemeni context and containing basic digital materials and/or links that teachers and students can use.

Target: Yemeni MOE portal up and running and used by teachers and students by June of 2009

Results achieved to date:

The Drupal open source portal has been launched and teachers are posting lesson plans to share with each other and are posting comments and sharing ideas via the site. The portal has had a healty level of activity in August and September. See the report on number of "hits" in Appendix H.

E. Future Partner Recruitment

We have included this result area as one goal of the partners is to be able to extend the project to other grades and other governorates. In order to be able to do this, it is highly likely that the project will need to expand its funding base by attracting additional private sector contributors.

Result: Additional partners join the INTALEQ project and provide funding to expand the project's work to other grades and other governorates.

Target: Two additional partners by the end of the first year of the project.

Result achieved to date:

Project staff and USAID have been working to attract more private sector partners. In some way, this has been difficult as the project activities have been in full swing and it has been summer (when many people travel). EDC has contacted ComputeMe and CAC Bank and USAID has contacted (or re-contacted) Natco as well as the Ibn Khaldoon Foundation and Canadian Nexon. HSA has suggested that the project ask the Chamber of Commerce to hold an event to invite potential new partners (mainly from Yemeni businesses and multinational firms). Both EDC and USAID think this is a good idea but do feel that the private sector partners would have to play a catalyzing role in this in order to really attract new investment. In other words, the "testimonials" given by HSA and Al Awn would be important to establishing confidence among other potential partners. The Chamber of Commerce Event will be pursued more aggressively in the next quarter.

F. Progress Against Project Workplan

Activities completed are highlighted in green; those completed in the last quarter are highlighted in light blue. Activities marked with an X and no highlighting are scheduled to be completed in the months ahead.

For the most part the project has stayed on track. There have been some delays and the delayed activities are highlighted in orange. The delays mainly related to the training of instructional leaders and the training of MOE supervisors to undertake the project's M&E activities. Principals and supervisors have received some training in instructional leadership in a break out session during the teacher training, in which they participated. However, we decided to wait until the fall semester, when the project is operating in all

four governorates to do a more formal training for instructional leaders. Likewise, the training for the MOE supervisors will occur in the fall such that they can take over some of the data collection/M&E functions of the project.

Appendix A

Project Work Plan

INTALEQ PROJECT REVISED WORKPLAN

Legend: Clear background with X = scheduled; Green background = task completed in previous quarter; Blue background = task completed in 4th quarter; orange background means task was delayed. Current delays are related in large part to the delayed start of the 2009/2010 school year in Yemen

			2008		2009												2010
Revised INTALEQ Implementation Plan	Responsibility	Financial coverage	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan
Project start-up			X														
OBJECTIVE 1: DIGITAL MATERIALS ADAPTATION/LOCALIZATION																	
Project Launch event with MOE, US AID , Partners, others, press	MOE approves invitees and invitation; EDC conducts event	EDC pays for event; MOE hosts it	X														
Select 4 Yemeni MOE counterparts from the technology department in the MOE to localize skoool content;	MOE	MOE to assign them for an estimated 10 to 15 days over the project period each semester to do this localization for both semesters	X														
Select 4 Yemeni MOE counterparts from the curriculum department and 4 from the ERDC in the MOE to localize skoool content;	MOE	MOE to assign them for an estimated 10 to 15 days over the project period to do this localization for both semesters		X													
Orient 4 counterparts to INTEL's skoool.com site and to its existing Arabic language digitized content and train in the localization process; (completed at workshop in Cairo).	EDC and MOE	EDC covers 1 trainer, translation costs, transportation, per diem; MOE covers normal salaries of employees; Intel provides main trainers/workshop	X														
Survey Yemeni curricula in science and mathematics for secondary grades and identify priority areas (i.e. hard to teach areas, critical concepts, etc.) for project support, in the form of digitized materials and teaching resources; (Cairo workshop)	MOE	As above; EDC will cover retreats or meetings in Yemen to continue the work begun in Cairo	X														
Identify and catalogue existing INTEL Arabic language materials for 10th grade math and science for localization to Yemeni context;	MOE	As above; EDC will cover localization retreats or meetings in Yemen to continue the work begun in Cairo	X	X													
Train remaining counterparts in Localization	EDC and MOE	EDC covers workshop facilitator, transportation, per diem; MOE covers normal salaries of employees		X													
Localize skoool resources according to priority areas from curriculum;	MOE	MOE--salaries; EDC--workshops--the Cairo workshop and "retreats" in Yemen (December 2008--2nd semester materials; summer 2009 --	X	X	X	X					X	X	X	X	X		
Develop and implement a school selection process with clear criteria; send 1 EDC and 1 MOE person plus DG and local partner representative team to the directorates to examine schools; then use a team to select the 20 schools	MOE	EDC covers minimal travel costs for a subset of the selection team out to review potential schools.		X		X											
Develop school agreement form that detais what is expected from each school that participates in the the project.	EDC and MOE	No funding required		X													
Name the project coordinator/school liaison at MOE to keep schools informed, sign agreement with school head covering what the schools will be responsible for, and keep schools on track with using the materials	MOE	No funding required			X												
Identify a tech support person and project liaison at each school	EDC and MOE	No funding required				X							X				

			2008		2009												2010
Revised INTALEQ Implementation Plan	Responsibility	Financial coverage	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan
OBJECTIVE 2: MATERIALS DISSEMINATION SYSTEM																	
With counterparts from MOE design/adapt portal architecture	EDC presents options to MOE and they select architecture; EDC confirms with other partners	EDC to cover development of design options	X														
Build portal	EDC to create home pages for INTALEQ project; MOE to mount it on existing site	EDC covers development costs for pages and translation; MOE to mount on its site		X	X												
Send content to Intel as it becomes available to mount on the Yemen skoool.com website (via email)	MOE	No funding required		X	X	X					X	X	X				
Second semester materials for math, physics, chemistry and biology on-line and ready for use	Intel and MOE	Intel				X											
Test portal accessibility in project schools in Sana'a	EDC and school participants	EDC pays internet costs for schools until school or MOE takes over				X	X	X	X								
Translate Curriki platform (or Drupal platform) and customize for Yemen								X	X	X							
Curriki , or Drupal option, added to portal	Curriki	Curriki										X					
Portal available to all INTALEQ schools in Sana'a, Ta'iz, Aden and Mukalla and in use by these schools	MOE	EDC pays internet costs for schools until school or MOE takes over											X	X	X	X	X
Open up portal to public/press event with partners at a local school.(Do it for the entire project in Sanaa and then encourage the other directorates to do a similar event locally. Implement in October, after Ramadan,when schools are fully in session.)	MOE with EDC	EDC but MOE hosts it														X	

			2008		2009												2010
Revised INTALEQ Implementation Plan	Responsibility	Financial coverage	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan
OBJECTIVE 3 ACTIVITIES: CAPACITY BUILDING																	
Refine/revise (as needed) IYHS and ILSI teacher and administrator/supervisor training materials; Post to Curriki	EDC	EDC		X	X												
Develop computer skills survey and administer to participating teachers in all project schools. (Mukalla will be done later than the rest because the survey instrument needs to be enhanced because the Mukalla teachers have had more previous training in using ICTs than the teachers in the other sites.	EDC with approval of MOE	EDC				X					X						
Train INTALEQ trainers (MOE localization team, supervisors, Curriculum Dept. people, Univ. master teachers from IYHS, etc.) in using the Portal, skoool content, along with a strong foundation in active learning and learner centered lesson planning	EDC	EDC			X												
Train math and science teachers at each participating school in the Sana'a governate using the Portal, skoool content, along with a strong foundation in active learning and learner centered lesson planning	EDC and MOE	EDC				X											
Train supervisors on instructional leadership to support teachers, including designing activities they can lead for in-service training in the LRC.	EDC and MOE	EDC				X									X		
Followup Training for Sana'a teachers - workshop to review lessons learned, introduce curriki, and introduce the addiditonal learning objects now available for first semester use	EDC and MOE	EDC										X					
Train trainers on Curriki	Curriki	Curriki										X					
Train teachers from Mukalla, Aden and Ta'iz on Curriki	Curriki	Curriki										X					
Revise Training Materials for Active Learning/Using Learning Ojbects training based on Sana'a experience	EDC and MOE	EDC									X						
Train math and science teachers at each participating school in Mukalla, Aden and Ta'iz on using the Portal, skoool content, along with a strong foundation in active learning and learner centered lesson planning	MOE and EDC	EDC										X					
Post final version of training materials on Curriki	MOE	No funding required														X	
Train MOE inspectors to collect data on teacher practice and to administer student assessment and use Flip cameras for teacher and student observations	EDC	EDC				X								X	X		
Hold meeting for supervisors to review their classrooms visits, data collection, discuss issues and plan for the next school year/semester; Sana'a supervisors in September and Mukalla, Ta'iz and Aden supervisors in January.	EDC and MOE	EDC											X				X
Hold meeting for principals to discuss issues and plan for the next school year/semester; Sana'a principals in September and other governorates' principals in January	EDC and MOE	EDC											X				X

			2008		2009												2010
Revised INTALEQ Implementation Plan	Responsibility	Financial coverage	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan
MONITORING, EVALUATION AND REPORTING																	
Advisory Board Meetings	EDC and MOE	EDC							X			X			X		X
Additional partner recruitment	EDC and MOE	No funding required										X	X	X	X	X	X
Quarterly Reports submitted; reports are due 30 days after close of quarter; quarters are October - December; January. - March; April - June; and, July - September.	EDC wth MOE	EDC			X			X			X			X			X
Report on student assessment results from pilot in Sana'a due in June; report on student assessment results from the four governorates due in January.	EDC with MOE	EDC								X	X						X
Develop test based on Learning Objects for second semester content *	EDC and MOE	EDC					X										
Develop test based on Learning Objects for first semester content *	EDC and MOE	EDC									X		X	X			
Develop Teacher journal to record their lessons and use of the Learning Objects	EDC and MOE	EDC				X											
Develop observation instrument for supervisors to use	EDC and MOE	EDC				X											
Develop teacher survey for collecting their evaluation at end of semester	EDC and MOE	EDC						X		X							
Adminster second semester test as pre test in Sana'a project and control schools	EDC and MOE	EDC					X										
Correct student tests and enter exam data into Excel							X	X	X	X							
Conduct Data Analysis										X							
Collect and analyze observational data on teachers in classrooms and student assessment data	EDC and MOE	EDC				X	X	X	X	X			X	X	X	X	
Adminster teacher evaluation surveys	EDC and MOE	EDC							X		X						X
Collect and analyze teacher journals	EDC	EDC							X	X							X
Collect supervisor reports	EDC	EDC							X	X							X

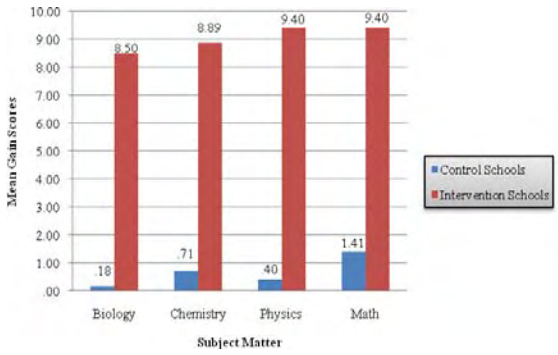
			2008		2009												2010
Revised INTALEQ Implementation Plan	Responsibility	Financial coverage	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan
MONITORING, EVALUATION AND REPORTING																	
Administer second semester test as a post-test in Sana'a proejct and control schools	EDC and MOE	EDC							X								
Adminster First semester test as pretest in all participating and control schools	EDC and MOE	EDC											X	X	X		
Adminster first semester test as post-test in all participating and control schools	EDC and MOE	EDC															X

*** Note on student tests - test results will be analyzed using a gain score analysis. There is no need to develop separate forms of the test for pre and post use as both program and control students will have the same test-retest bias.**

Appendix B

INTALEQ Student Assessment Report

INTALEQ Student Assessment Report



PHASE 1 (July 2009)

A Global Development Alliance Project

Prepared and Submitted by Education Development Center, Inc

Abstract

Under the INTAELEQ Project, as part of its monitoring and evaluation work, tenth grade students were sampled from nine schools in Sana'a and were tested in four subject areas: physics, biology, chemistry, and math. These students belonged to six intervention schools and three control schools in Sana'a. The project used a pre- and post-test model to evaluate whether students in the intervention schools showed significant learning gains over their counterparts in the control schools in the four subject areas. Test results revealed a substantial and a statistically significant difference (at the o .01 level) in the mean (average) gain scores between intervention and control schools. Each intervention school had a 7 to 9 point mean gain over the control schools. These results strongly suggest that the intervention positively affected students' performance in each subject matter in all intervention schools. The results have a 95% confidence level.

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I. Background on the Project

The **INTALEQ** (**IN**novations in **T**echnology-**A**ssisted **L**earning for **E**ducational **Q**uality) project is a public/private partnership initiative that will help Yemeni students "step up" to the future by giving them a chance to master the types of skills necessary to flourish in the 21st century. INTALEQ (which means "step up" or launch in Arabic) offers a replicable model for leveraging the power and pull of technology, not just to teach computer and internet skills, but to improve core teaching and learning in Yemeni high schools, particularly in the essential areas of math and science. INTALEQ's overarching goal is: Improved acquisition of 21st century skills by Yemeni high school students, so that they are better equipped to find work, live productive lives and contribute to Yemen's development as a stable and prosperous democracy.

INTALEQ partners are: the Yemeni Ministry of Education, the U.S. Agency for International Development, the Haile Saeed Anam Group, the Al Awn Foundation, Intel, Curriki and Education Development Center, Inc.

INTALEQ will be implemented in a total of 20 schools in Sana'a, Ta'iz, Mukalla and Aden over a 16-month period, which began in October of 2008.

In phase one (roughly October 2008 – May 2009 including project start up and launch), the project has been implemented in six schools in Sana'a and has: 1) adapted existing, Arabic-language ***Intel skoool.com*** digital math and science materials for the second semester of grade 10 in Yemen;[1] 2) assisted the Ministry of Education to develop an educational portal to share the new materials; 3) trained teachers and administrators to use the first set of digital learning materials to improve classroom instruction and student learning; 4) followed up with teachers in the schools and 5) collected and analyzed data on the impact of the digital learning materials and the training program on student learning and teacher performance in Sana'a.

The project will be expanded to the additional 14 schools in Ta'iz, Mukalla and Aden starting in August 2009 and will use the experience and results of the pilot in Sana'a to guide the expansion. This report documents the process of monitoring and evaluating student performance in the INTALEQ schools and presents the student assessment results.

II. Interventions

Tenth grade students from nine schools in Yemen and were tested on target concepts in four content areas: physics, biology, chemistry, and math. These students were enrolled in six "intervention" (INTALEQ project) schools and three "control" schools (i.e. where there was no intervention). The intervention schools were Al-Khansa'a, Al-Quds, Al-Sabeen, Omer Bin Abdulaziz, Fatima Al-Zahra' a, and Sinan Hadroum. Omer Bin Abdulaziz is a boys' school and

[1] Intel's skoool.com materials for math and science education have won multiple awards and are known for their innovative promotion of the types of critical thinking and problem solving skills described in the box above that are the very essence of 21st century skills.

the rest are girls' schools. The control schools were Al-Kuwait, Al-Thowra, and Bilquis. Among the control schools, Al Kuwait is a boys' school and the other two are girls' schools.

The interventions administered to the INTALEQ project schools included:

A. The provision of ***digital learning objects*** for use by students in school computer labs, under teacher direction;
B. Training for teachers and school administrator on how to use the digital learning objects to structure hands-on, active learning lessons for students on the key 10th grade math and science concepts;
C. Periodic follow up visits by project staff/MOE to check on teachers' progress in using the learning objects.

Each is elaborated on briefly below.

A. Digital Learning Objects

The digital learning objects were developed as part of the Intel Corporation's skoool.com program, separate from the INTALEQ project. The learning objects are instructional tools that run on a computer (much like an applet) and can be used off of a CD or the internet. They provide students with simulations of scientific processes using audio/video and/or animation. They often focus on hard to teach concepts where the addition of animation or some interactive problem solving activity helps maximize students' understanding. The learning objects are meant to supplement and enrich existing lessons; they are not stand alone lessons but intended to be integrated into a teacher's overall unit plans. Appropriate learning objects were selected by the Yemeni Ministry of Education (MOE) from amongst Intel's pool of Arabic language digital learning objects developed and tested by Intel in Saudi Arabia, Egypt and Libya. The majority of the objects selected by the Yemeni team were from the Intel Egypt collection.

The objects were selected because they aligned with the Yemeni 10th grade curriculum for physics, math, biology or chemistry and reinforced concepts and skills emphasized in the Yemeni curricula. The learning objects were "localized" i.e. adapted to the Yemeni context by a team of Yemeni MOE experts drawn from the department of Educational Technology and Aids, the Curriculum Department and the Education Research and Development Center. The team was led by members from the Department of Educational Technology and Aids. The team leaders were trained by Intel adaptation experts in Cairo, Egypt and they in turn trained the additional team members. The objects were largely localized by the team during a retreat in December of 2008. Once the team did the localization, an Intel programming team in Cairo made the actual changes to the digital objects and returned them to the MOE team for review and validation. The objects localized during this time period were for the second semester of 10th grade in the four subject areas mentioned above.

B. Training and Capacity Building

EDC, with MOE approval, designed a training program for trainers and for 10th grade teachers in the four subject areas from the intervention schools. EDC began with some materials used in its previous projects in Yemen (the IYHS and ILSI projects) and updated these materials to incorporate a stronger focus on project-based learning and integrated sessions on using the digital learning objects. In January of 2009, EDC trained a cadre of trainers, drawn from the localization team, master teachers from the IYHS and ILSI projects, MOE supervisors and some university professors in the field of education. This cadre constitutes a resource for the MOE to draw on in expanding the program. EDC trainers, with selected members of this cadre, trained 10th grade math and science teachers from the six project pilot schools in Sana'a in February of 2009. The teachers were then tasked with returning to their schools, having committed to using the learning objects regularly in the school computer labs with their students. Indeed, the school principal had to formally commit to ensuring that teachers used the learning objects with their students in the labs, in order to be selected for participation in the project. As part of the training, a break out session was organized for school administrators, to sensitize them to how to support and follow up with teachers in the utilization of the learning objects.

C. School-based Follow Up

INTALEQ staff and the MOE paid follow up visits to the school during the course of the semester and conducted several focus group meetings with teachers and administrators to track their progress in using the new teaching methods and incorporating the digital learning objects into their instruction. INTALEQ staff and MOE counterparts facilitated the meetings and provided advice and support on using the materials and the computer lab equipment. During the follow up visits, qualitative data was collected on how teachers were using the materials in the form of video footage of lessons and focus group notes and discussions with administrators.

The control schools received no intervention from the project (i.e. they did not have access to the digital learning objects and received no training or follow up from the INTALEQ project).

III. Student Assessment Instrument Development

The INTALEQ project developed assessment instruments (tests) keyed to the learning objects (which were directly keyed to the Yemeni curricula in the four subject areas) to evaluate whether the new teaching methods and the digital learning objects had an impact on student learning. The tests were developed by an EDC Arabic speaking content and assessment expert (math and biology) and by the MOE and Intel experts (physics and chemistry). The same basic multiple choice format was used for all tests; some questions involved solving a problem to determine the correct answer, which was one of the multiple choices offered.

The INTALEQ team actually used 2 versions of the same exam (A and B) for each subject. For the pre-test, the test versions were randomly distributed in each classroom, to minimize the risk that results would be skewed by students sharing answers. The two versions contained the same

questions, but the sequencing of the questions was different on each version. For the post test, students received the same version of the test they took for the pre-test. The tests had the following number of items:

- Physics exam A - 41 items
- Physics exam B - 41 items

- Chemistry exam A - 35 items
- Chemistry exam B - 35 items

- Math exam A - 35 items
- Math exam B - 35 items

- Biology exam A - 33 items
- Biology exam B - 33 items

IV. Sample Characteristics

The six INTALEQ schools in Sana'a are Al-Khansa'a, Al-Quds, Al-Sabeen, Omer Bin Abdulaziz, Fatima Al-Zahra' a, and Sinan Hadroum. From the six project schools, INTALEQ sampled almost half of the tenth grade math and science classes. In each school, an entire grade level is broken down into classes, or sections.

- Omer Abdulaziz Boys' school: 11 sections of 10th graders; 4 randomly selected for testing.
- Al Quds Girls' school: 6 sections of 10th graders; 3 randomly selected for testing
- Al Zahra' a Girls' school: 4 sections of 10th graders; 2 randomly selected for testing
- Sinan Hadroum Girls' school: 4 sections of 10th graders; 2 randomly selected for testing
- Al Sabeen Girls' school: 4 sections of 10th graders; 2 randomly selected for testing
- Al Khansa'a Girls' school: 4 classes of 10th graders; 2 randomly selected for testing.

A total of 15 sections (classes) were given both the pre- and the post-tests in each subject area (math, biology, physics and chemistry) in the control schools.

The three control schools are Al-Kuwait, Al-Thowra, and Bilquis. Control schools were selected that matched the project schools across various characteristics such as school size (i.e. number of students and teachers), socio-economic strata, and availability of technology. Sections or classes of students to be tested in the control schools were randomly selected from among the available list of sections.

Tenth grade students from nine schools in Yemen were tested on four areas of subject matter: physics, biology, chemistry, and math. The students were enrolled in six intervention schools and

three control schools. The number of students involved in each school by subject matter is presented in Table 1.

Table 1. Sample size in Intervention and Control Schools by Subject Matter

		Subject Matter (n)			
	School Name	*Physics*	*Biology*	*Chemistry*	*Math*
Intervention Schools	Al-Khansa'a'	98	100	96	104
	Al-Quds	119	135	118	136
	Al-Sabeen	100	98	98	97
	Omer Bin Abdulaziz	241	223	241	217
	Fatima Al-Zahra'	96	97	95	94
	Sinan Hadroum	120	116	113	119
	Subtotal (N)	774	769	761	767
Control Schools	Al-Kuwait	115	77	124	83
	Al-Thowra	80	81	82	72
	Bilquis	102	102	114	117
	Subtotal (N)	297	260	320	272
Total Sample Size (N)		1071	1029	1081	1039

* N.B. The numbers reported in Table 1 are the valid number of students who did both the pretests and posttests for each subject matter and had computed gain scores for these tests.

The distribution of subject matter pre-test scores of both the intervention and the control schools were close to normal. (Figures 1 – 8).

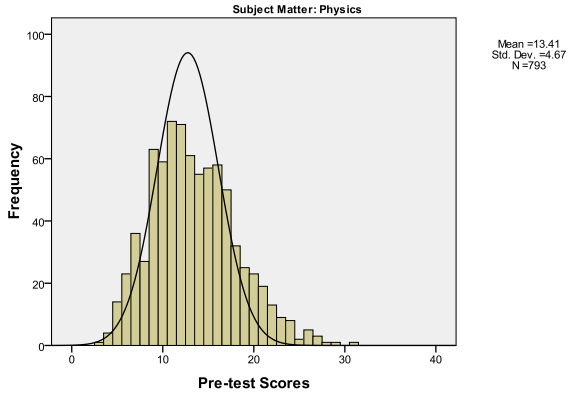

Figure 1. Frequency Distribution of Physics Pretest Scores of Intervention Schools

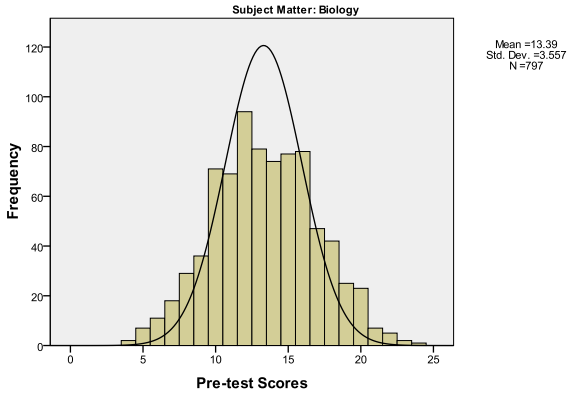

Figure 2. Frequency Distribution of Biology Pretest Scores of Intervention Schools

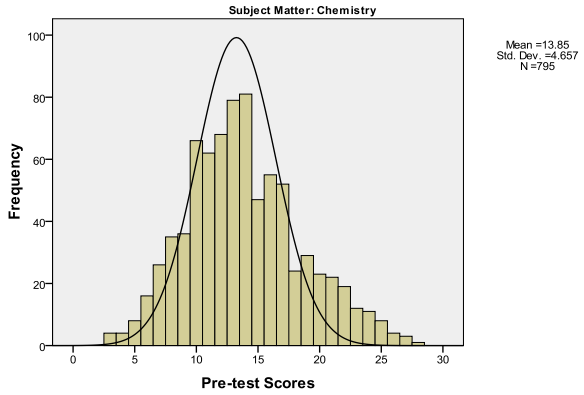

Figure 3. Frequency Distribution of Chemistry Pretest Scores of Intervention Schools

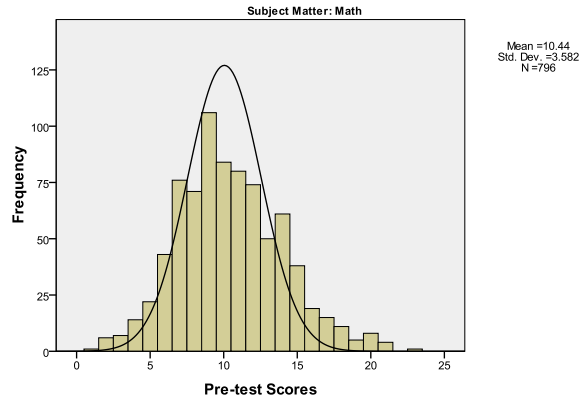

Figure 4. Frequency Distribution of Math Pretest Scores of Intervention Schools

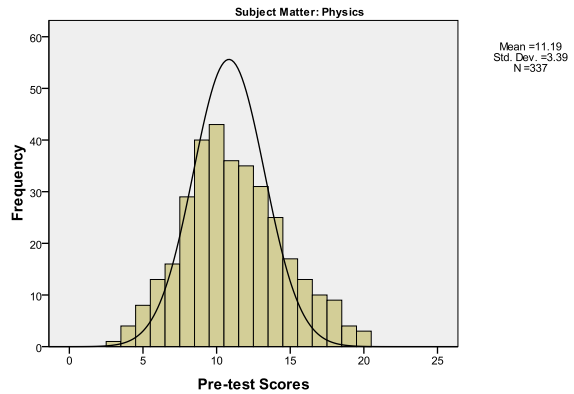

Figure 5. Frequency Distribution of Physics Pretest Scores of Control Schools

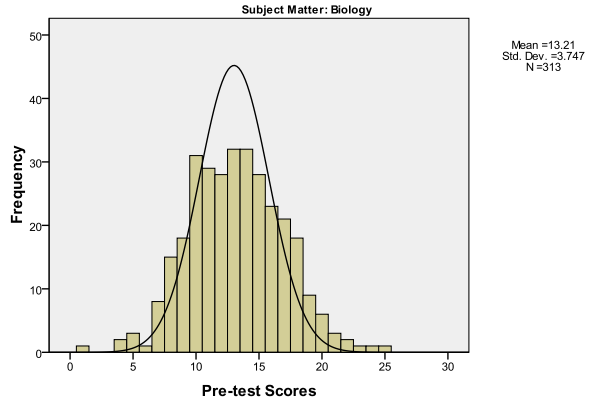

Figure 6. Frequency Distribution of Biology Pretest Scores of Control Schools

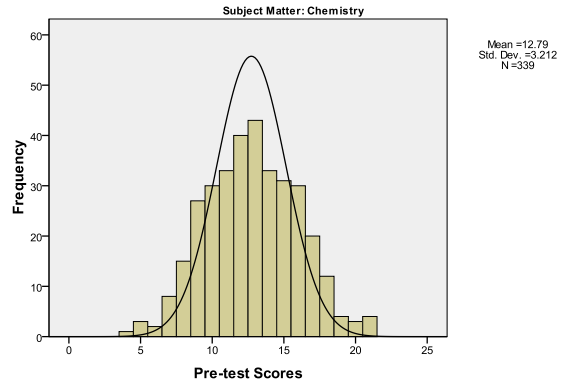

Figure 7. Frequency Distribution of Chemistry Pretest Scores of Control Schools

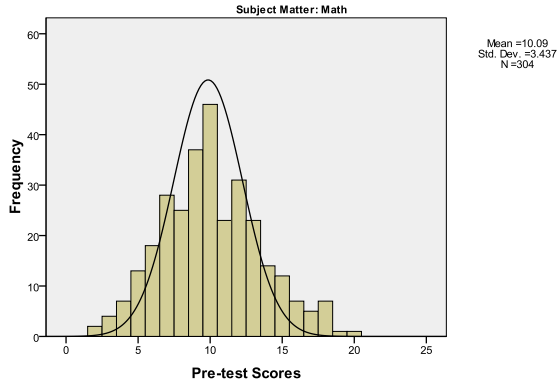

Figure 8. Frequency Distribution of Math Pretest Scores of Control Schools

Hence, the characteristics of the samples of this study were similar to that of the general population of 10th graders' subject matter pretest scores.

V. Test Administration, Correction and Data Entry

Pre-tests were administered in mid-March to a sample of 10th grade students in all nine schools and were re-administered as post-tests in late May, to the same sample of 10th grade students in all nine schools. The tests were administered by the teachers, and because of class size, people who were not MOE employees (university students, and secondary school graduates whom the project hired) acted as invigilators in order to make sure that students were not sharing answers and that no one left the classrooms with a copy of the test paper.

Tests were collected by the invigilators and returned to the INTALEQ staff. Classroom teachers were invited to come to the EDC office to correct the testes. (There were 4220 tests to correct in total; hence it could not be done efficiently by the INTALEQ staff.) Those who were free after the school shift (i.e. those who didn't have family commitments) accepted the invitation. The teachers were given an answer key and corrected the tests at the EDC office over the course of several days for each administration (pre- and post). EDC staff randomly selected several tests to double correct. If any errors were found in the double correction process, the entire set of tests for that class was reviewed.

All data were entered into an Excel spreadsheet by EDC's administrative assistant (for the pre-test) and by the administrative assistant and one of the graders who was familiar with Excel for the post-test as time was tighter after the post test. The Excel spreadsheets were then uploaded into SPSS for analysis.

Dr. Fouad Abdelkhalick, an Arabic speaking professor/researcher/teacher trainer at the University of Illinois and EDC casual employee, ran the statistical analyses in order to investigate the effectiveness of the intervention in the context of the four content areas.

VI. Results: Comparison of Subject Matter Scores between Intervention and Control Schools

The analyses indicate that the intervention resulted in substantial improvement in the intervention schools' student performance in all four content areas when compared to that of the control schools' students. What is more, these improvements cannot be attributed to chance; that is, they reflect "real" gains in the intervention group students' achievement. This inference was based on the following three conditions:

- First, the intervention group students' *subject matter posttest scores* were higher than their pretest scores. These differences were statistically significant. In comparison, differences between subject matter pretest and posttest scores for the control group were either minimal or did not even exist.
- Second, subject matter *mean gain* scores for the intervention group were substantially higher than those of the control group. This indicated that the intervention had improved the intervention students' performance in each subject matter to a substantially larger extent than that for the control group students.

- Third, subject matter *mean gain scores for each of the individual intervention schools* were higher than the subject mean gain scores of each of the individual control schools. This indicated that the intervention was effective irrespective of the school in which it was undertaken.

Comparison of the intervention group's mean gain scores across subject matter areas showed statistically significant differences for Biology, Physics, and Math mean gain scores. This might indicate that the intervention had larger impact on students' performance in Physics and Math than Biology.

A. Comparison of Subject Matter Pretest and Posttest Scores of Intervention and Control Schools

A paired-wise *t*-test was conducted in order to investigate the nature of any observed improvements in participant students' test scores. A *t*-test helps establish whether any observed differences between a group's pretest and posttest scores reflects actual improvements or could simply be attributed to the "luck-of-the-draw," that is, that improvements happen to be related to the specific group of students chosen for study. Thus, a "statistically significant" difference means the observed difference cannot be explained by chance.

There were statistically significant improvements in the intervention group students' performance in the four subject matters. These students' subject matter posttest scores were higher than their pretest scores. However, in the control group, the differences were not statistically significant: posttest scores in this latter case were either less, equal to or only slightly more than, the pretest scores (Table 2).

Table 2. Comparison of Mean Pre-test and Post-test Scores of Intervention and Control Schools by Subject Matter

Subject Matter	*Condition*	*Schools*	*Pre-test Scores (M)*	*Post-test Scores (M)*	*t*	*df*	*p-value*
Physics	Intervention	Al-Kansa'	14.40	22.98	13.00	97	.00*
		Al-Quds	15.58	24.06	19.03	118	.00*
		Al-Sabeen	12.29	22.84	25.84	99	.00*
		Omer Bin Abdulaziz	12.87	21.41	21.55	240	.00*
		Fatima Al-Zahra'	13.91	26.80	32.40	95	.00*
		Sinan Hadroum	12.30	21.27	24.63	119	.00*
	Control	Al-Kuwait	10.77	10.09	-1.31	114	.19
		Al-Thowra	11.56	11.81	0.54	79	.59
		Bilquis	11.57	13.29	3.75	101	.00*
Biology	Intervention	Al-Kansa'	13.88	21.44	15.93	99	.00*
		Al-Quds	14.52	22.31	19.03	134	.00*
		Al-Sabeen	13.42	22.90	19.69	97	.00*
		Omer Bin Abdulaziz	12.79	18.89	18.73	222	.00*
		Fatima Al-Zahra'	13.61	26.51	30.39	96	.00*

		Sinan Hadroum	12.64	22.90	23.98	115	.00*
	Control	Al-Kuwait	13.00	11.49	-2.69	76	.009*
		Al-Thowra	13.67	14.17	1.01	80	.32
		Bilquis	13.24	14.43	2.57	101	.01*
Chemistry	Intervention	Al-Kansa’	13.35	20.47	12.02	95	.00*
		Al-Quds	17.51	22.66	11.84	117	.00*
		Al-Sabeen	16.93	22.44	13.39	97	.00*
		Omer Bin Abdulaziz	10.77	22.34	39.46	240	.00*
		Fatima Al-Zahra'	15.53	26.42	23.29	94	.00*
		Sinan Hadroum	13.32	23.12	26.13	112	.00*
	Control	Al-Kuwait	12.47	8.84	-6.28	123	.00*
		Al-Thowra	13.02	15.62	4.83	81	.00*
		Bilquis	13.20	17.28	8.42	113	.00*
Math	Intervention	Al-Kansa’	11.54	18.93	13.45	103	.00*
		Al-Quds	12.04	19.76	18.54	135	.00*
		Al-Sabeen	11.03	21.09	24.02	96	.00*
		Omer Bin Abdulaziz	9.46	19.04	33.59	216	.00*
		Fatima Al-Zahra'	11.07	20.66	20.70	93	.00*
		Sinan Hadroum	8.52	20.60	36.00	118	.00*
	Control	Al-Kuwait	10.36	11.42	2.58	82	.01*
		Al-Thowra	10.11	10.86	1.63	71	.11
		Bilquis	9.75	11.81	4.56	116	.00*

**Statistically Significant (p<.05)*

B. Comparison of Subject Matter Pretest and Posttest Mean Gain Scores between the Intervention and Control Schools

Next, mean gain scores were computed for each subject matter. Gain scores refer to the difference between posttest and pretest scores. These scores show the extent to which students’ performance in each of the subjects matter has improved after the intervention. The mean gain scores for the intervention and comparison group were then statistically compared using a *t*-test. Such a comparison allows making conclusions about changes in students’ test scores while accounting for any initial differences between the intervention and control students’ scores. In other words, the conclusions below already take into account whether students in the intervention or control group started out with higher or lower scores than students in the other group.

On average, students’ performance in each of the subject matter improved in the intervention schools. Intervention schools’ mean gain scores were highest for Physics (M = 9.40, SD = 5.416) and Math (M = 9.40, SD =4.715), then Chemistry (M = 8.89, SD = 5.309), and Biology (M = 8.50, SD = 5.179) (Table 3; Figure 9). On the other hand, there was a slight improvement in students’ performance in each subject matter in the control schools (Table 3). The highest subject matter mean gain scores in the control schools was in Math (M = 1.41, SD = 4.334), then

Chemistry (*M* = 0.71, *SD* = 6.616), Physics (*M* = 0.40, *SD* = 4.990), and Biology (*M* = 0.18, *SD* = 4.816) (Table 3; Figure 10).

Table 3. Descriptive Statistics for Intervention and Control Schools' Gain Scores by Subject Matter

		Gain Scores					
	Subject Matter	*N*	*M*	*SD*	*Minimum*	*Maximum*	*Range*
Intervention Schools	Physics	774	9.40	5.42	-18	27	45
	Biology	769	8.50	5.18	-8	22	30
	Chemistry	761	8.89	5.31	-7	29	36
	Math	767	9.40	4.72	-7	25	32
Control Schools	Physics	297	.40	4.99	-17	15	32
	Biology	260	.18	4.82	-17	15	32
	Chemistry	320	.71	6.62	-18	19	37
	Math	272	1.41	4.33	-16	14	30

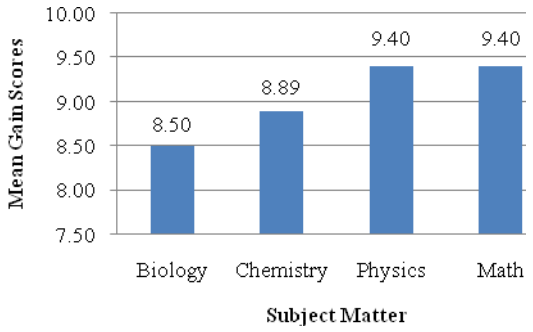

Figure 9. Subject Matter Mean Gain Scores for Intervention Schools

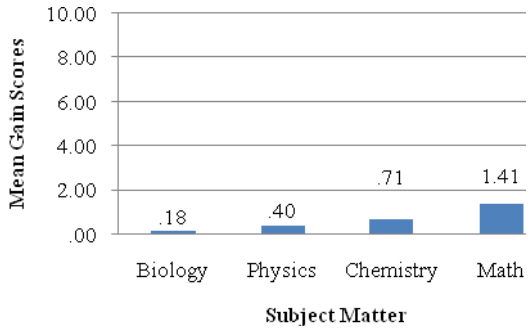

Figure 10. Subject Matter Mean Gain Scores for Control Schools

Subject matter mean gain scores of intervention schools were found to be higher than those of the control schools (Figure 11; Table 4). A *t*-test was conducted in order to confirm that differences in subject matter mean gain scores between the intervention and control groups were real and could not be attributed to chance. The *t*-test indicated statistically significant differences in subject matter mean gain scores between the two groups; indicating that the intervention substantially impacted and improved students' performance in each of the subject matters in the intervention schools, as compared to the control group.

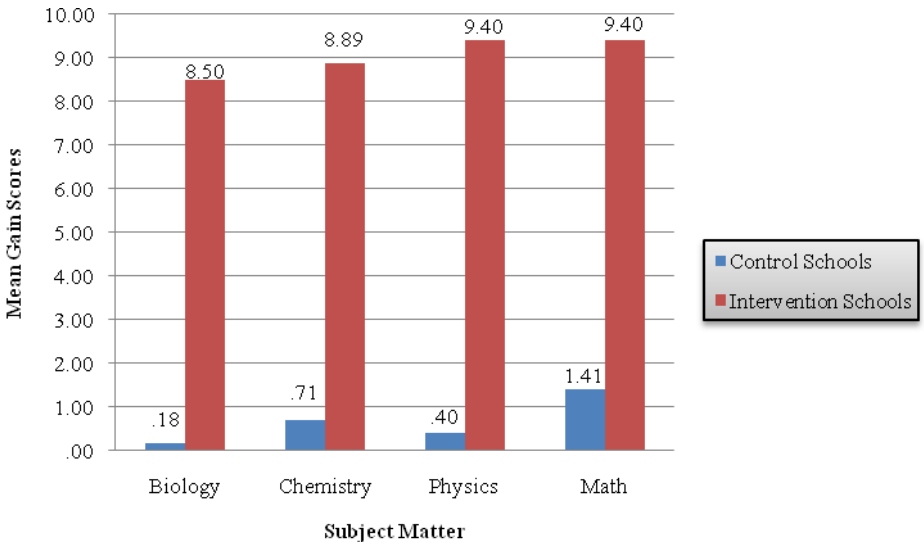

Figure 11. Subject Matter Mean Gain Scores of Intervention and Control Schools

Table 4. Comparison of Subject Matter Mean Gain Scores across Intervention and Control Schools

	Mean Gain Scores				
Subject Matter	*Intervention Schools*	*Control Schools*	*t*	*df*	*p-value*
Physics	9.40	0.40	25.807	578.793	.000
Biology	8.50	0.18	23.623	476.615	.000
Chemistry	8.89	0.71	19.609	499.775	.000
Math	9.40	1.41	25.537	514.264	.000

The subject matter mean gain scores of each intervention school were higher than those of each of the control schools (Table 5). In order to confirm differences in subject matter mean gain scores, a *t*-test was conducted. Results revealed that the differences were statistically significant; hence, such differences were real and could not be attributed to chance (Table 6). This indicated that the intervention affected students' subject matter performance in each of the intervention schools.

Table 5. Descriptive Statistics of Subject Matter Gain Scores by School

		Gain Scores							
		Physics		*Biology*		*Chemistry*		*Math*	
	School Name	M	SD	M	SD	M	SD	M	SD
Intervention Schools	Al-Khansa'a	8.58	6.53	7.56	4.75	7.11	5.80	7.39	5.61
	Al-Quds	8.48	4.86	7.79	4.76	5.15	4.73	7.73	4.86
	Al-Sabeen	10.55	4.08	9.48	4.77	5.51	4.07	10.06	4.13
	Omer Bin Abdulaziz	8.54	6.15	6.10	4.86	11.58	4.55	9.58	4.20
	Fatima Al-Zahra'	12.90	3.90	12.90	4.18	10.89	4.56	9.59	4.49
	Sinan Hadroum	8.97	3.99	10.26	4.61	9.81	3.99	12.08	3.66
Control Schools	Al-Kuwait	-0.68	5.55	-1.51	4.90	-3.63	6.44	1.06	3.75
	Al-Thowra	0.25	4.15	0.51	4.50	2.60	4.87	0.75	3.90
	Bilquis	1.73	4.65	1.20	4.70	4.08	5.17	2.06	4.89

Table 6. Comparison of Subject Matter Mean Gain Scores of each Intervention Schools with Control Schools

Significance Level (p-values) of Tukey's HSD Post Hoc Test				
		Control Schools		
Subject Matter	*Intervention Schools*	Al-Kuwait	Al-Thowra	Bilquis
Physics	Al-Kansa'	0.00**	0.00**	0.00**
	Al-Quds	0.00**	0.00**	0.00**
	Al-Sabeen	0.00**	0.00**	0.00**
	Omer Bin Abdulaziz	0.00**	0.00**	0.00**
	Fatima Al-Zahra'	0.00**	0.00**	0.00**
	Sinan Hadroum	0.00**	0.00**	0.00**
Biology	Al-Kansa'	0.00**	0.00**	0.00**
	Al-Quds	0.00**	0.00**	0.00**
	Al-Sabeen	0.00**	0.00**	0.00**
	Omer Bin Abdulaziz	0.00**	0.00**	0.00**
	Fatima Al-Zahra'	0.00**	0.00**	0.00**
	Sinan Hadroum	0.00**	0.00**	0.00**
Chemistry	Al-Kansa'	0.00**	0.00**	0.00**
	Al-Quds	0.00**	0.00**	0.00**
	Al-Sabeen	0.00**	0.00**	0.00**
	Omer Bin Abdulaziz	0.00**	0.00**	0.00**
	Fatima Al-Zahra'	0.00**	0.00**	0.00**
	Sinan Hadroum	0.00**	0.00**	0.00**
Math	Al-Kansa'	0.00**	0.00**	0.00**
	Al-Quds	0.00**	0.00**	0.00**
	Al-Sabeen	0.00**	0.00**	0.00**
	Omer Bin Abdulaziz	0.00**	0.00**	0.00**
	Fatima Al-Zahra'	0.00**	0.00**	0.00**
	Sinan Hadroum	0.00**	0.00**	0.00**

*** Statistically significant (p <.05)*

C. Comparison of Subject Matter Mean Gain Scores across Intervention and Control Schools

An Analysis of Variance (ANOVA) test was conducted to determine whether there were significant differences across the mean gain scores for the four subject matters. Simply put, an ANOVA performs several *t*-tests at once comparing mean gains across several pairs of groups. If significant, an ANOVA indicates that, at least, one pair of the compared mean gain scores was statistically significant. This test showed a statistically significant difference across the mean gain scores of the four subject matters in the intervention schools ($F = 5.540$, $p < .05$) (Table 7). However, by itself, an ANOVA does not show which of several pairs of mean gain scores were statistically significant. Thus, the ANOVA was followed by a Tukey Post Hoc test to specify which of the compared mean gain score pairs were statistically significant. Tukey's test showed that differences existed between Biology and Math, and Biology and Physics mean gain scores, whereby students' Biology mean gain scores were lower than the Physics and Math mean gain scores (Table 8).

Therefore, the results confirmed that students of the intervention group performed better in Physics and Math than Biology. This might indicate that the intervention had rather a larger impact on students' performance in Physics and Math than Biology.

Table 7. Analysis of Variance for Mean Gain Scores across Subject Matter

	Sum of Squares	*df*	*Mean Square*	*F*	*p-value*
Between Groups	442.880	3	147.627	5.540	.001
Within Groups	81734.497	3067	26.650		
Total	82177.377	3070			

Table 8. Tukey's HSD Post Hoc Test for Subject Matter Mean Gain Scores

	Significance Level of Tukey's HSD Post Hoc Test			
	Physics	Biology	Chemistry	Math
Physics				
Biology	.004**			
Chemistry	.208	.460		
Math	1.000	.003**	.206	

*** Statistically significant (p <.05*

VII. Conclusions

Tenth grade students in schools assisted by the INTALEQ project performed significantly better than their peers in schools not participating in the INTALEQ project in the areas of math, physics, chemistry and biology. The results have a 95% level of confidence. Hence, it is highly likely that the difference in mean gain scores noted between the intervention and control school students is attributable to the INTALEQ project interventions.

Appendix C

Summary Report on Teacher-developed

Monthly Tests for Students in the Four Subject Areas

INTALEQ Yemen Project—Teacher Monthly Test Results

August, 2009

Synopsis

This study assessed tenth grade students' performance on four content areas: Math, Physics, Chemistry, and Biology. This assessment specifically aimed to determine whether students' performance in each of the content areas improved as a result of the INTALEQ intervention held during the second semester[1] of the academic year 2009 (that is from February to May).

Eight-hundred and seven students of the six INTALEQ schools[2] were tested on a monthly basis during their academic year, which started in September and concluded in May. Average scores of the monthly exams for semesters 1 and 2 were computed and statistically compared to determine whether there were differences between these scores before and after the INTALEQ intervention.

Results showed that, on average, students' performance in all four subject matters improved during the second semester, as students scored higher on their monthly exams in the second semester as compared to the first semester. The *t*-test showed that differences in subject matter average scores between the first and second semester were real and could not be attributed to chance; indicating that the intervention might have impacted and improved students' performance in each of the subject matters in the INTALEQ schools.

A) Descriptive Statistics

The test for normality indicated that the populations of the average scores for each of the subject matters are normally distributed, since normality indictors, Skewness and Kurtosis, fall within the -2 and +2 range. Whereas Skewness measures the symmetry of the distribution, Kurtosis measures the peakedness of the distribution (Table 1).

In the first semester, students scored lowest in Math (12.71), but highest in Biology (14.50). This pattern was also common to the scores of the second semester. The median measures showed that in the first semester, 50% of the students scored more than 12.00 pts in Math, 14.00 pts in Physics, 15.00 pts in Chemistry, and 15.00 pts in Biology; as compared to the second semester, where 50% of the students scored more than 14.00 pts in Math, 15.00 pts in Physics, 16.00 pts in Chemistry, and 17.00 pts in Biology (Table 1).

[1] Semester 1 includes months September through January. Semester 2 includes months February through May.

[2] The INTALEQ Schools include: Al-Khansa', Al-Quds, Fatima Al-Zahra', Omer Bin Abdulaziz, Al-Sabeen, and Sinan Hadroum.

Table1. Descriptive Statistics of Semester Average Scores by Subject Matter

Average Scores by Content Area		*N*	*MD*	*M*	*SD*	*Variance*	*Skewness*	*Kurtosis*
Semester 1	Math	768	12.00	12.71	3.20	10.24	0.015	-0.083
	Physics	771	14.00	13.19	3.86	14.87	-0.368	-0.622
	Chemistry	767	15.00	14.19	3.47	12.03	-0.716	-0.436
	Biology	772	15.00	14.50	3.65	13.29	-0.555	-0.740
Semester 2	Math	768	14.00	14.54	3.21	10.32	-0.092	-0.418
	Physics	770	15.00	15.01	3.10	9.62	-0.476	0.973
	Chemistry	768	16.00	15.68	3.08	9.48	0.988	-0.244
	Biology	772	17.00	16.71	2.61	6.82	0.351	0.927

B) Comparison of the Content Areas Average Scores of the First and Second Semesters

On average, students' performance in all four subject matters improved during the second semester. Students' second semester average scores (of all four subject matters) were higher than their average scores of the first semester (Figure 1). Average increase in scores ranged from 1.82 pts in Math and Physics, to 1.49 pts in Chemistry, to 2.22 pts in Biology (Table 2).

A *t*-test was conducted in order to confirm that differences in subject matter average scores between the first and second semester were real and could not be attributed to chance. The *t*-test indicated statistically significant differences in subject matter average scores between the two semesters; indicating that the intervention might have impacted and improved students' performance in each of the subject matters in the INTALEQ schools (Table 2).

Table 2. Comparison of Average Scores by Semester and Content Areas

	Semester 1	*Semester 2*				
Content Area	*M*	*M*	*Mean Difference*	*t*	*df*	*p-value*
Math	12.71	14.54	1.82	21.10	766	.000
Physics	13.19	15.01	1.82	19.12	768	.000
Chemistry	14.19	15.68	1.49	14.17	765	.000
Biology	14.50	16.71	2.22	23.90	770	.000

*** Statistically significant (p <.05)*

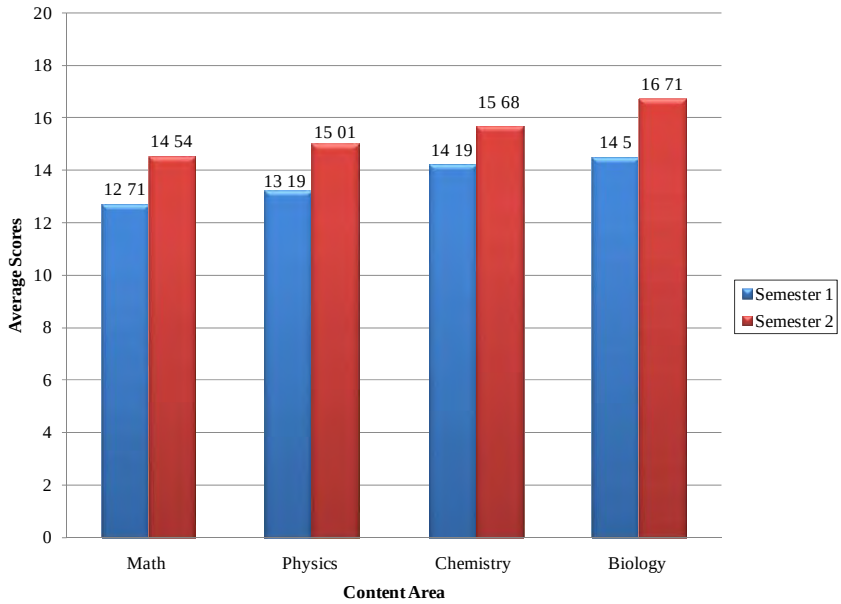

Figure 1. Average Scores for the First and Second Semesters by Content Area

Appendix D

List of MOE Trainers for August 2009 INTALEQ Basic Training

INTALEQProject

INnovations in Technology-Assisted Learning for Educational Quality

الورشة التدريبية الخاصة استخدام الوسائط المتعددة في تعزيز التعلم المتمحور حول الطالب

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21	Radman Saeed	777166493	d_radmansaeed@hotmail.com	Math		الجامعة	
22	Yasmeen Mohammed	777299128	ak1Y@Yahoo com	Biology		مناهج	

* Please note that the participants highlighted are the ones that were selected to be trainers for August 2009 Basic Training

Appendix E

Lead Trainer Resumes/CVs

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Home Address
[redacted]

SUMMARY OF EXPERIENCE: Dr. Saouma Boujaoude is an expert in instructional materials design and evaluation as well as teacher training. He has served as a key advisor on instructional materials development and training projects for all grade levels in both the Middle East and the United States, traveling between Lebanon, Jordan, Yemen, and New York to assist schools and Ministries of Education in adapting curricula to student and community needs as well as the national policy dictates and concerns. In addition, he has aided many of those institutions to develop grade-appropriate supplemental instructional materials that have emphasized students' varied learning styles and gender-neutral themes. Finally, Dr. Boujaoude's experience guiding his own university students through the teacher preparation programs at both Syracuse University in the US and the American University of Beirut in Lebanon has provided him with a wealth of knowledge about staff development strategies and teacher training techniques. His prior experience as a school principal in Beirut has also given him a great deal of expertise in the practices and demands of instructional supervision.

EDUCATION

EdD	1988	Curriculum and Instruction with emphasis in science education, research, and teacher training, University of Cincinnati, Cincinnati Ohio
MA	1988	Education/Curriculum and Instruction, University of Cincinnati, Cincinnati, Ohio
BS	1971	Biology/Chemistry, American University of Beirut, Beirut, Lebanon

COUNTRIES OF WORK

Egypt, Yemen, Lebanon, USA, Jordan, Sultanate of Oman, Dubai

REPRESENTATIVE EMPLOYMENT HISTORY

American University of Beirut, Beirut, Lebanon (1993 – present)
Assistant Professor of Education, Department of Education, Division of Education Programs
Responsibilities include teaching Curriculum Methods and research courses, supervising science student teachers, advising graduate and undergraduate students, supervising research of doctoral students, and conducting and publishing research.

Director, Science and Math Education Center
Supervise and conduct in-classroom research on the links between teaching methodologies and the success of science and math curricula at the middle-school and high-school level.

Consultant in science curriculum and teaching methodology
Provide advice and guidance for a number of Lebanese and Jordanian schools seeking to improve their science instruction and teaching practices.

Education Development Center, Inc. Egypt, (2000-2001)
Education Advisor
As the USAID funded New School Program Education Advisor in Egypt, Dr. Boujaouda worked with the Egyptian MOE officials in designing training programs for teachers in Menia, Fayoum, and Beni Sweif. His responsibilities also include training trainers on how to use student-centered training materials. Duties included supporting and supervising the NSP technical staff, and working with the NSP partners in implementing program's activities.

Syracuse University, Syracuse, NY, USA (1988-1993)
Assistant Professor of Science Education, Department of Science Teaching
Responsibilities included teaching curriculum development, methods, and research courses, supervising science student teachers, advising graduate and undergraduate students, supervising research of doctoral students, and conducting and publishing research.

USAID/Education Development Support Project (EDSP), Republic of Yemen (1991-1992)
Curriculum Design Specialist
Assisted staff and local educators in the USAID supported Education Development Support Project (EDSP) to a) train a cadre of Yemeni curriculum specialists on all the process of curriculum development in science, math and reading, b) produce the Grade 1-3 instructional materials for science, math, and reading, and c) conduct school effectiveness research on elementary schools in Yemen.

New York State Stay in School Project, New York, NY, USA (1990-1991)
Teacher Training Consultant
Responsibilities include working with middle school teachers to design science curriculum material that would involve students in cooperative learning, and developing a plan to encourage students to stay in school by using novel approaches to curriculum and teaching.

St. Joseph School, Cornet, Chahwan, Lebanon (1975-1984)
Assistant Principal
Supervised 25 teachers across three grades (11th-13th), wrote and administered policies, and handled student disciplinary affairs.

LANGUAGES

Native Arabic speaker
English: Professional
French: Very Good

REFERENCES

Fouad Abd-El-Khalick
University of Illinois, Urbana Champagne,
fouad@uiuc.edu

Piyush Swami
University of Cincinnati,
piyush.swami@uc.edu

Curriculum Vitae

[redacted]

PERSONAL DATA

Date of Birth: [redacted]	**Nationality** : Lebanese
Address: [redacted]	**Marital Status**: [redacted]
Mail Address: Dr. Norma Ghamrawi Chouran P.O. Box: 13- 5196 Beirut- Lebanon	**Mobile**: [redacted] **E-mail**: [redacted]

Functional Summary

Specialized in the fields of Education, my expertise includes:

- Educational management of change and leadership in educational institutions.
- Leading inspection /evaluation teams to collect school data and hence design strategic plans for school improvement.
- Training of trainer (TOT) and designing training materials to various educational areas.
- Curriculum design and development, with special emphasis on science education at the elementary level as well as chemistry and physics education at the middle and secondary levels.
- Student assessment, both formal and informal including alternative and authentic assessment in all subject areas with special emphasis on Sciences at all school levels.
- Designing instructional strategies based on Brain-Based Learning and the Multiple Intelligences in all subject areas.
- Designing and conducting research in educational settings and then suggesting strategies for the implementation of change based on research outcomes.
- Designing pre and in-service teacher training programs.
- Designing teacher evaluation programs.
- Designing training programs for principals and head of departments (coordinators).
- Preparing for conferences and professional development events.
- Planning and executing international student activities.
- Designing, planning and executing training modules/twining projects on peace education, intercultural dialogue, equity and human rights.
- Needs assessment and development planning for educational institutions.

EDUCATION

2001-2006 **University of Leicester- Leicester – United Kingdom**

- Educational Doctorate (EdD) in ***Educational Management and Leadership***.
- EdD Thesis entitled: *" Investigating Teacher Leadership in Three Private K-12 Schools in Beirut, Lebanon"*. The study offered recommendations for both school policies as well as at the practical level of the school.
- The course of study emphasized the importance of leadership distribution as a keystone for any educational change, effectiveness or improvement.
- Worked extensively on research and acquired research skills belonging to both the interpretive and positivist paradigms.
- Acquired the skills of using the computer software: Non-numerical, Unstructured Data, Indexing Searching & Theorising NU*DIST Vivo 2.0 or shortly NVivo 2.0 from *QSR International.* NVivo 2.0 is a very richly featured and highly advanced program for handling Qualitative Data Analysis research projects.

1996- 2000 **Lebanese University – Faculty of Education – Beirut – Lebanon**

- MA , Science Education.
- Received a grade of 90% for the Master's Thesis entitled: *"Analysis of Analogies Generated by Grades 7 through 11 Students in Physical Sciences Classes in Private Schools"*
- **Remark**: I audited 6 courses of Physics at The American University of Beirut , concurrently during this period of time (minor physics)

1994-1996 **American University of Beirut- Beirut – Lebanon**

- Teaching Diploma for Sciences at the Secondary School level

1991-1994 **American University of Beirut- Beirut – Lebanon**

- BS, Chemistry (major)

July 1991 **Lebanese Baccalaureate II, Experimental Sciences Section**

EXPERIENCE

2008- till now **Lebanese University – Faculty of Education – Beirut - Lebanon**

Full-time Assistant Professor, lecturing in Educational Management and Leadership as well as Science Education.

2005-2008 **Rafic Hariri Foundation- Beirut- Lebanon**

- Director of the Center for Research & Training (CRT) based in Hariri High School II.
- The CRT aims at promoting the organizational learning and professional development of school staff belonging to both private and public schools in Lebanon and the region, in addition to the Rafic Hariri Foundation schools.

2000- 2008 **Lebanese University – Faculty of Education – Beirut - Lebanon**

- Part-time teaching "Science Practicum at The Elementary School".
- Part-time teaching "Chemistry Practicum at the Secondary School Level".
- Part-time teaching General Education courses including Educational Management & Leadership, Educational Technology, Instructional Techniques & Classroom Management.

2001- 2002 **American University of Beirut- Beirut- Lebanon**

2004 -2005

- Part-time teaching Education 257: "The Teaching of Science at The Elementary School" during the Fall Semester
- Part-time teaching Education 267: " Practicum of Elementary Science in Schools" during the Spring Semester

1994- 2005 **Al-Bayader Schools - Beirut - Lebanon**

- Secondary School Teacher of Physics & Chemistry, including the Lebanese Baccalaureate Official Exams Classes.
- Head of the Science Department, between 1997 & 2005.
- Director of Environmental & Science Clubs.

2005-2006 **Islamic University of Lebanon –Beirut - Lebanon**

Part-time teaching "Educational Management" courses for MA students

pursuing their higher education in Educational Management and Leadership.

SKILLS

Languages

Language	Reading	Writing	Speaking
Arabic	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent
French	Fair	Fair	Fair

Informatics Applications

Microsoft Word	Power Point	Logo Basics	Front Page
Microsoft Excel	Paint shop Pro	HTML	SPSS
NVivo 2.0	NVivo 7.0	Videograph	

SERVICE ON MEHE COMMITTEES

- (2008-2009) National Coordinator for the Report on Higher Education in Lebanon presented in UNESCO's Regional Conference on Higher Education in the Arab States (Arche +10).

- (2009-2011) Lebanese National Coordinator for the Education for Sustainable Development Project (ESD) sponsored and supervised by the UNESCO.

- (2009-2012) National Coordinator for the Team for Developing Higher Education in Lebanon (TDHEL) sponsored mainly by the World Bank.

PROFESSIONAL AFFILIATIONS

- Head of Advisory Board to the *Center for Research & Training of the Rafic Hariri Foundation, Beirut, Lebanon*; starting the academic year 2008. The center aims at promoting the organizational learning and professional development of school staff belonging to both private and public schools in Lebanon and the region, in addition to the Rafik Hariri Foundation schools.

- Member of the *"British Educational Leadership, Management and Administration Society"* (BELMAS), London, United Kingdom, since 2005. The Society seeks to advance the practice, teaching and study of educational management, administration and leadership and to contribute to international developments in these areas.

- Member of the *"Commonwealth Council for Educational Administration & Management"* (CCEAM), since 2005. CCEAM is a commonwealth organization linking professionals who manage educational institutions and/or teach or research in educational administration.

- Member of the *"Science & Math Education Center "* (SMEC) Conference Organizing Committee at the American University of Beirut, since 1997.

- Member of the *"Arab Council for the Gifted and Talented"* (ACGT), Amman, Jordan, since 2004.

- Licensed Associate (since 2004) for "GEMS": *Great Explorations in Math and Science, Lawrence Hall of Science, University of California at Berkley, United States of America*. Great Explorations in Math and Science (GEMS) is an internationally recognized resource for activity-based K-8 science and mathematics.

- Member of the team of the Faculty of Education of the Lebanese University that prepared training modules for principals of the Lebanese Public Schools as part of the requirements set forth by the Lebanese National Project for Leadership Development (Lebanese Ministry of Education), during the period (2005-2008).

- Participated in training public schools principals on leadership development as a member of the team of *TEAM* International (2005-2007). This has been a joint effort between the World Bank and the Educational Development Program (EDP) of the Lebanese Ministry of Education.

- Member of the Administrational Board of "Rawdat Al-Fayhaa High School", Tripoli, Lebanon, during 2008. Rawdat Al-Fayhaa High School is a K-12 school encompassing 5500+ students and almost 700 teacher. The board aims at promoting school improvement by initiating, implementing and monitoring reform projects in the school.

- Referee for *International Studies in Educational Administration* (ISEA), SAGE journal. ISEA aims to enhance the effectiveness of educational leadership, management and administration to support raising educational achievement in schools, colleges and universities and social, economic and educational development in a range of national contexts.

- Referee for *Educational Management, Administration and Leadership* (EMAL), SAGE journal. EMAL provides an important forum for research and analysis on all aspects of leadership, management, administration and policy in education.

- Member of the *Arab Reform Project* (TAMAM) sponsored by the Arab Thought Foundation and supervised by the American University of Beirut (2007-2010). The Project aims at developing a school-based grounded theory of educational reform in the region that will provide policymakers with research-based recommendations for implementing educational reform in their countries.

- Member of the *EuroMed Project: Intercultural Dialogue* (2006-2011). The EuroMed project is an Austrian initiative that is supported by the Austrian Ministry of Education, Science and Culture and the Anna Lindh Foundation. It aims at the establishment of long-term partnerships of secondary schools from Europe and the MEDA countries.

- Member of the *Empower Peace Organization*, Boston, Massachusetts, USA, since 2005. Empower Peace is a non-profit organization that is dedicated to building a worldwide network of high school students and teachers committed to breaking down cultural barriers and misperceptions through open dialogue using video-conferencing and the Internet. Its

goal is to bring about a climate of mutual respect and understanding by exposing youth to their contemporaries from abroad.

- ASPnet (Associated Schools Project Network) School coordinator, between 2005-2008. Associated Schools commit to promoting the ideals of UNESCO by conducting pilot projects in favor of better preparing children and young people to meet effectively the challenges of an increasingly complex and interdependent world.

- Member of the Lebanese Association for Educational Studies (LAES) since 2008. LAES aims at developing and disseminating educational knowledge; advancing the educational research community in Lebanon; and interacting with similar associations in the Arab Countries and the world.

PROFESSIONAL ACTIVITIES

- Regular contributor to the Science and Math Education Conference that is held annually at the American University of Beirut. (workshops, ..presentations..)

- Attended and contributed to the research methods workshops held at the University of Leicester, Leicester, United Kingdom during the summer of 2004 and 2005.

- Contributor to the LEAS research on evaluating science textbooks issued by the National Center for Research and Development (CERD) during the spring of 2002.

- Participated in "Teacher of the Third Millennium" Conference , Amman, Jordan, May, 2006.

- Trained on using NVivo 7.0 qualitative research software by QSR international in London city, United Kingdom in February 8-9, 2007.

- Conducted a 3-days training workshop for Science teachers of *Dhahran Ahlia Schools*, Khobar, Kingdom of Saudia Arabia between February 21-25, 2007.

- Received training by "The European Council" on "*New Competences for Teacher Training*" in Donaueschingen, Germany, between June 25 – 29, 2007.

- Participated in the Contact &Training Seminar of the *EuroMed Project: Intercultural Dialogue*, May 8-13, 2007, Vienna, Austria. The EuroMed project is an Austrian initiative that is supported by the Austrian Ministry of Education, Science and Culture and the Anna Lindh Foundation. It aims at the establishment of long-term partnerships of secondary schools from Europe and the MEDA countries.

- Participated in *Women2Women Leadership Annual Conference*, in August 5-10, 2007, as well as August 8-16 , 2008 in Boston, Massachusetts, USA. The conference comprises a series of workshops, keynote speeches and cultural outings, administered by professionals from Harvard University, Lesley University and Tufts University, on how to foster the acquisition of leadership skills by female youth..

- Trained on using *VideoGraph* qualitative research software at the American University of Beirut on December 1st , 2007.

- Attended and contributed to the organization of the *Intercultural Dialogue Conference* that took place in Copenhagen, Denmark between January 20-25, 2008. The Conference has been dedicated to youth belonging to four countries: Turkey, Austria, Denmark & Lebanon. Its purpose is to exchange cultures and hence promote tolerance among nations through breaking stereotypes.

- Conducted a Science Workshop for Science teachers of *Al-Shaqab School*, supervised by Qatar University, Doha Qatar on March 10, 2008.

- External consultant for the *Dubai Inspection Bureau* (DSIB) since 2008. The Dubai Schools Inspection Bureau is the first organization in the UAE solely dedicated to defining and measuring the quality of school education in Dubai.

- Supervised the Norwegian Cultural Exchange Project twinning the two schools "Hanes School", Kristiansand, Norway and Hariri High School II, Beirut, Lebanon during the academic year 2007-2008. The project is intercultural in nature aiming at promoting peace and tolerance between youngsters (7th graders) in both schools through arts.

- Worked as a trainer of trainers for the American Institute for Research (AIR) , Washington, DC. Training took place in Egypt between July 6-31 and August 19-22, 2008. This has been within the context of the Egyptian Education Reform Program that focused on providing subject-area supervisors from 270 districts with greater skills in identifying, facilitating, and supporting pedagogical practices that are consistent with the goals of Egypt's educational reform (particularly active learning and a focus on critical thinking and problem solving). Tasks included: 1) selecting content from the Egyptian curriculum that lends itself to training in active learning; 2) developing training material for master-trainer preparation; and 3) lead the master-trainer preparation sessions.

- Contributed to UNESS Project (UNESCO National Education Support Strategy) during November, 2006. UNESS is a UNESCO effort aiming at ensuring effectiveness in response to Member States' needs and demands for educational development. My role was to analyze qualitatively, through "thematic content analysis", all the reports prepared by UNESCO offices in all Arab states to present a cluster matrix which was adopted for defining UNESCO's programme priorities and implementation strategies in each country for the next five years.

- Presented a poster presentation in *Fikr 7 Annual Conference* organized by the Arab Thought Foundation held in Cairo, between November 13-16, 2008. The poster presentation highlighted what works and what does not in professional development of school staff based on empirical experience in particular Lebanese schools.

- Participated in the Second National Research Coordinators' meeting for TIMSS 2011, which was held in Washington, DC between 10-15 May, 2009. The main purpose of the 2nd NRC meeting was to develop new mathematics and science items and scoring guides for the field test and to review the TIMSS 2011 background questionnaires.

- Represented Lebanon officially in UNESCO's Regional Conference on Higher Education (Arche+10) on behalf of the Ministries of Education and External Affairs. The conference was held in Cairo, Egypt between May 31-June 2, 2009.

- Attended the inauguration of Queen Rania's Teacher Academy (QRTA) and the launching conference entitled "Teacher Education at Cross Roads" on June 14-16, 2009. QRTA aims at training Jordanian educators via collaboration with Columbia University in New York. The two-day conference joined 170 regional and international experts.

PUBLICATIONS & PRESENTATIONS

- Published an Environmental Unit for the First Secondary Class in SMEC News Letter issued by the Science & Math Education Center at The American University of Beirut during the Academic Year 2000-2001.

- Science Activities Manual for grades 4 ➔ 6 (An Al-Bayader School Publication)

- Physics Laboratory Manual for Grades 7 ➔ 12 (An Al-Bayader School Publication)

- Chemistry Laboratory Manual for Grades 7 ➔ 12 (An Al-Bayader School Publication)

- Ghamrawi, N. (2006). Trust me your school can be better. A message from teachers to principals. Paper presented at the Annual British Educational Leadership Management & Administration Society (BELMAS), Brimingham, United Kingdom.

- Ghamrawi, N.(2006). Redefining the role of teachers as leaders. Paper presented at the first annual conference of Al-Israa Private University, Amman , Jordan.

- Ghamrawi, N. (2007). How does it look like? Teacher Leadership in three private K-12 schools in Beirut, Lebanon. School Leadership & Management. London: Sage.

- Jurdak M., BouJaoude S. & Norma Ghumrawi N. (2007).Comparison of mathematization in microcomputer based laboratory (MBL) and verification – Type laboratory (VTL) in physics. In Pitta-Pantazi, P. & Philippou, G. (Editors*), Proceedings of the Fifth Congress of the European Society for Research in Mathematics Education, pp*. 2110-2119. Larnaka, Cyprus: European Society for Research in Mathematics Education and Department of Education, University of Cyprus.

- Presented a paper entitled "Professional Development that Makes a Difference" in the *First International Conference for School Leadership*, organized by Abu Dhabi Education Council (*ADEC*) in Emirates Palace , Abu Dhabi on April 20, 2008.

- Presented a paper entitled "A Vision of Effective Professional Development in Schools" in the *First Meeting for School Leaders* , organized by the Saida Schools Network on February 21, 2009, under the patronage of the Minister of Education, M.P. Bahia Hariri.

- Prepared the "Report on Higher Education in Lebanon - 2009" for the UNESCO Regional Conference on Higher Education (Arch 10+).

REFERENCES

Available upon request

Norma Ghamrawi

[redacted]

Address: [redacted]
Tel (home) [redacted], (mobile) [redacted] Email: [redacted]

Curriculum Vitae

PROFILE:

- More than 20 years of experience in the field of IT, education, teacher professional development and project management. This includes: (i) strategic planning, (ii) project appraisal & development, (iii) liaison / settle agreements with partners, (iv) manage human resources, budget and consultancies, (v) oversee project implementation and (vi) lead professional development workshops.
- Five years of experience working for an internationally recognized NGO, World Links Arab Region (WLAR), the Arab holding of World Links International. Started as the Jordan National Coordinator and progressively promoted to the post VP for Programs.
- Several years of experience at the Ministries of Education in Jordan and Qatar with leading roles in introducing ICT in the education system.
- Leading roles in developing and promoting e-learning strategies/ education reform at the Ministry of Education in Jordan.
- Leading roles in several education initiatives at the Ministry of Education in Jordan, such as:
  - (i) Member of the e-Learning Coordination Unit which has been set up and supported by CIDA with the mission to develop and promote e-learning strategy at the Ministry.
  - (ii) The British Council / DFID initiatives: "Introducing ICT in Secondary Schools", "Capacity Building" and "The ICT Project – Salt Cambria"
  - (iii) Member of the Jordan National Team charged with introducing computers into Secondary Education.
- Worked with several International agencies / donors such as the British Council, Canadian International Development Agency (CIDA), USAID, UNRWA, EDC, UNDP, MEPI and AED.
- In depth knowledge of the Education for Knowledge Economy and ICT teacher professional development policy.
- High awareness of public sector practices and public-private partnerships.
- In depth knowledge of several ICT teacher professional development programs such as World Links, Intel Teach to the Future and some of the Wide Courses/ Harvard University.
- Qualified trainer in diverse environments and topics, using experiential and adult learning techniques.
- Excellent organizational and intercultural communication skills.
- Computer competent, proficient with Windows software and Internet/Web resources.

CAREER OBJECTIVE:

To utilize my experience within a performance-oriented organization to achieve both corporate goals and personal advancement in one of the following areas:

- Education Reform
- Professional Development
- Youth Programs

WORK EXPERIENCE

Oct 03 – Feb 08
www.wlar.org

World Links Arab Region (WLAR) – Jordan

Successively
. *Vice President for Programs*
. *Director of Programs - Jordan and the GCC Countries*
. *Jordan National Coordinator*

Oversaw the design, marketing, promotion, delivery and quality of WLAR programs, products and services in the Arab Region.

Worked with WLAR International / country staff and partners to ensure solid programs' performance.

Managed WLAR projects including budget, consultancies, resources, reporting and evaluation studies.

Launched and carried out the program in Jordan, managed WLAR team, project budget and all program activities.

1997– 2003

Ministry of Education – Jordan
Successively
. *Advisor for Teaching and Learning at E-Learning Coordination Unit (ELCU)*
. *Head of Education Software Division*
. *Acting Director Assistant / Computer Center*
. *Acting Head of System Analysis and Programming Division*
. *System Analyst*

Developed, planned and oversaw implementation of the Ministry of Education projects and liaison with partners and donors among other responsibilities.

Was one of the Ministry team (ELCU), who led the promotion and development of the Ministry e-learning strategy and maintained synergy with the Ministry's plan for education reform.

Designed, developed and implemented some of the Ministry software.

1990 – 1997

Ministry of Education - Qatar
Head of Computer in Education Unit for Girls

Developed, planned and implemented strategies for introducing ICT in the secondary schools.

Contributed to the development and implementation of a 6-month technical and pedagogical training program aimed at preparing Qatari teachers to teach ICT in the secondary schools.

Contributed to the development of ICT curriculum and co-authored the text books for the secondary grades.

Supervised and mentored ICT teaching in the female secondary schools.

1981 – 1989 **Ministry of Education** – Jordan
Head of Analysis & Programming Division,
Head of Computer in Education Division
System Analyst
Programmer

Designed, planned, developed and implemented a number of the Ministry software such as payroll, personnel and others.

Had leading roles in the DFID project aimed at introducing computer literacy in the Ministry schools.

Contributed to the development of ICT curriculum and co-authored the text books for the secondary grades.

TRAINING EXPERIENCE

- **Served as instructor/trainer in various ICT related workshops including:**
  - **World Links** Teacher Professional Development/ Regional Trainer
  - **Intel** Teach to the Future/ Master Trainer
  - **New Brunswick** Department of Education Summer Institutes – (Co Trainer & Translator)
  - **Teacher professional development** workshops in Jordan and Qatar including a 6- month teacher professional development program in Qatar.
  - **Technical training** such as: Oracle, Computer Literacy courses, Programming.

- **Participated in various conferences and study visits among which:**
  - 2004 The roundtable meeting organized by FIRDOS (a Syrian NGO) with the objectives to explore ICT for development aspects.
  - 2003 World Links Annual Coordinators Conference – Washington DC, USA
  - 2003 Intel Round Table – Portland , USA
  - 2002 Study visit to New Brunswick, with focus on ICT integration in education, Canada.
  - 2002 The British Council international seminar "Implementing ICT in schools from policy into practice" , UK
  - 2001 Study visit to UK with focus on ICT integration into education.
  - 2001 Representative of Jordan at ALESCO Conference "Computer Applications in Education", Syria

- Member of the official Jordanian delegation on a familiarization visit to the British educational institutions. – UK
- Representative of Jordan at ALESCO Conference "Computers in Education", Tunis

LANGUAGES

Arabic: mother tongue; **English**: fluent; **Russian**: fluent or proficient

EDUCATION

1986-1990	M.A Electrical Enginerring, **University of Jordan.** Finished 30 credit hours with Cumulative grade average 82.3% (very good) at the Master Program of Electrical Engineering.
1974-1981	M.S. Engineering/ElectronicsEngineer **Kharkov Polytechnic Institute** – Russia Master of Science in Engineering/Electronics Engineer Final Diploma Project on "*Data processing in the Cross-Software of Intel 8080 Microprocessor*" with a mark excellent.
1974	High School Certificate/ Scientific Stream, Jordan; Was **the fourth among the top 10** female students at the Ministry General Secondary Certificate.

PUBLICATIONS

(1984-1987)	Text books for computer literacy for the first secondary class - Jordan
(1995-1997)	Text Books for computer literacy for the 1st, 2nd and 3rd Secondary classes - Qatar. Various training materials for Oracle, Windows, Excel, Basic, Auto Sketch and others. Articles in Education Periodicals.

COMMITTEES' MEMBERSHIPS

2004 – Feb 08	WLAR – MOE / Jordan Steering Committee
2001 – 2002	British Council/Ministry of Education Capacity Building Project: "*Capacity Building/enhance learning in 1-3 grades through ICT*". Salt / Cambria ICT project.
2001	AMIR program workshop "*Creating a New ICT Spirit in Jordan through Education"*
1987 – 1989	Member of the National Team charged with introducing computers into Secondary Education in Jordan
1981 – 2003	Member of various committees for curriculum, teachers' training, and ICT both in Jordan and State of Qatar.

ON JOB TRAINING

Attended various Pedagogical and Technical Training workshops/conferences/study tours in USA, UK, Canada, Jordan, Qatar, Kuwait, Syria and Tunis. (*For technical training details please see the table below*)

2007	Wide World Program -Harvard University Teaching for Understanding: Focus on Student Understanding	Online
2003 – 2004	World Links Teacher Professional Development	WL – Jordan
2003	Intel Teach to the Future	Intel – Cyprus
2002	Results Based Management Training	Association of Canadian Community Colleges - Jordan
2002	Cisco Networking Academy Program, Semester 1 & 2	Amman – Jordan
2001	International Computer Driving License (ICDL)	Amman – Jordan
2001	Visual Basic Developer Course (MS Certified Course)	CompuBase – Jordan
1999	Internet Administration	STS – Jordan
1999	Front Page	STS – Jordan
1999	Oracle Web	ITCC – Jordan
1998	Programming in Java	RSS - Jordan
1995-1996	**Oracle RDBMS**: • SQL*Forms 4.5 • Report Writer 2.5 • DBA II • DBA I • Report Writer 1.1 • Using Procedural Options • SQL*Forms 3.0 • SQL*Plus **Networking:** • Introduction to PC Networking • Introduction to PathWorks • PathWorks v5 administration • PathWorks v5 Installing & Configuring OSF/1 • PathWorks v5 Installing & Configuring multi vendor client. • Digital Unix Network Management **OSF/1:** • OSF/1 Technical overview. • OSF/1 Utilities & Commands • OSF/1 System Administration.	Digital Equipment Doha –Qatar

	• Digital UNIX Security Management.	
1989	Oracle RDBMS	CEB – Jordan
1987	Microcomputer Maintenance	CCS – Jordan
1985	Advanced InfoBasic	Prime Corp. Dallas – USA
1985	Population and human planning resources and development.	Arab Planning Inst. Kuwait
1983	Miscellaneous training on Prime Computer (Operating System, Programming, etc.)	Prime Corp. Framingham – USA
1982	Operating, Programming and Maintaining W201 scanner linked with HP-1000 Comp.	Westinghouse Corp. Iowa – USA
1981	Advanced Cobol Programming	Bureau of Statistic-Jordan

[redacted]
Phone: [redacted] Fax (202) 698-6038
Email [redacted]

KEY QUALIFICATIONS:

More than 7 years progressive experience in international development in education in several countries in the Middle East and Africa; rich experience in leading technical and management activities in the implementation of educational projects both from the home office and in the field; sound skills in managing and tracking project budgets; supervising staff; improving productivity; team building; designing, organizing and conducting technical activities including M&E; leading procurement processes; contributing to generating new business.
Hard working, autonomous, team-builder, coach and mentor, excellent mastery of 3 languages, well-versed in computers especially MS Windows, Office and Internet, sensitive to the local cultures, well-traveled, experienced in negotiation with host country government officials, experienced in dealing with donors, agencies and government institutions.

PROFESSIONAL EXPERIENCE

Education Advisor with EDC: ***June 2009 to Present***

While I took some time off for personal reasons, I provided technical assistance to the Yemen project.

Education Advisor of SIRIP project (extension period) in Hargeisa, Somaliland: Sept.08-May 09

For the extension period of USAID-funded *Somali Interactive Radio Instruction* Project (SIRIP), the Education Advisor was responsible for the day-to-day management, supervision and coaching of three teams: Teacher Training Development, Monitoring and Evaluation, and Materials Development. I was also working closely with the only other expatriate of the project on managing the project in finance, administration and human resources, supporting the Admin and Finance manager, the accountant, the logistics manager, ian, the program Coordinator in Somaliland, the Project field Coordinators in Puntland and South Central Somalia. I worked as the Acting COP when the COP was vacation or on travel. I represented EDC with USAID, the Ministry of Education, the Ministry of Information, the UN organizations and other partners. In addition, I have been one of three contributors to the development of Quarterly Reports to submit to the funder.
For EDC, I have been responsible for looking for new business for Somalia office, EDC East Africa Center and for EDC Francophone Africa Center.

Education Advisor of SIRIP project in Hargeisa, Somaliland: ***Jun.07-Sept.08***

The resident Education Advisor is the technical manager for the development of the educational programs for SIRIP. Programmatically, I was responsible for the management and coaching of 26 staff-members with diverse tasks in the cycle of the development of these educational programs. I was also responsible for quality control of the final product which were produced in Somali language, and for the coherence of the content of the programs with the training of teachers and the Teachers' Guides and other printed materials. I was also responsible for the capacity building of the Ministry staff on creating educational programs. Administratively, I was the Acting COP in the absence of the COP, I liaised with the COP and the Home Office in Washington on managing the budget, generating new business and solving issues in the field.

Project Coordinator II and Trainer at EDC (Washington DC, USA): ***May.04-Jun.07***

Coordinator of projects in Yemen, Mali, Guinea, and Madagascar: the coordination work focused on managing with the project directors, multi-million dollar budgets, supervising the work in the field offices, liaising between the home office and the field staff especially the COP, ensuring the

field work was in accordance with the projects' requirements and meeting the requirements of the agreements with the funders ; assisting the field staff in conducting their work effectively and efficiently through regular field visits and/or from home office in Washington, DC.

During visits to the field, which constituted more than 50% of my work time per year, I have provided two types of support to the field offices: technical and managerial. Technically, I provided assistance to three projects in Yemen, two in Guinea, one in each of these countries: Mali, Madagascar, D.R of the Congo, and Somalia/Somaliland. I trained teachers, teacher trainers and government officials in planning, developing and producing educational programs, as well as monitoring and evaluation activities. At the management level, I played the role of Acting COP in Mali for extended periods of time, and in Somaliland since being posted. I assisted field offices in hiring local staff (Yemen, Guinea, Mali, DR Congo, and Somaliland), preparing Manual for Policies and Procedures for field offices, making procurements for large items and liaising between the field and the home offices.

In this capacity, I also represented EDC and the projects in the field with the donors, the different partners and the host country governments.

I sought new business for EDC in many countries such as Yemen, Morocco, Egypt, Somaliland, Kenya, Mali, Congo and Guinea. This involved several tasks such as researching, making contacts with potential donors, looking for partners in the field, preparing budgets, contributing to writing proposals;

Research Assistant, College of Education, at Illinois State University ***Jan.02-May.04***
I conducted research on several projects in education at the national, state and city levels; analyzed qualitative and quantitative data collected in the field; Assisted in the organization and administration of some projects.

Computer Training Manager, Kouera Computer, Chefchaouen Morocco ***Apr.99-Jul.01***
I organized computer training for different-age groups, developed training modules and delivered computer training to different age-level groups.

English Teacher, Al-Azhar School, Chefchaouen, Morocco ***Sept.94-Jun.99***
I taught English as a foreign language for high school students (ages 15-19);

CONSULTANCY

Radio programs for the PACEEQ project in Guinea: ***Jul.02-Jun.04***

- Co-organized and delivered the first workshop on writing scripts for educational radio programs using IRI (Interactive Radio Instruction) to journalists of two Rural Radio Stations;
- Worked with different partners on developing the themes of the radio programs;
- Assisted and guided the individual scriptwriting teams in Labé and in Kankan to write master plans and scripts;
- Reviewed scripts in Pulhar and Malinké languages to ensure quality;
- Oversaw the production of the radio programs in Labé and Kankan regions;
- Organized formative evaluation of the programs;
- Assisted EDC-field personnel in providing better guidance to the script writers;

EDUCATION:

Master of Science, Educational Administration and Foundations ***May.04***
Illinois State University, Normal IL
Areas of Specialty: Qualitative and Quantitative Research Methods; Educational Policy; GPA of 4.0 out of 4.0 scale;

Bachelor of Arts, English Language and Literature ***May.94***
Abdelmalek Essaadi University, Tetouan Morocco
Areas of Specialty: Languages and Linguistics;

CONFERENCES AND PAPERS

Educational reforms in Morocco: Are the new reforms feasible?
Co-authored chapter in Al-Bataina & Nur-Awaleh (2005): International Education Systems and Contemporary Education Reforms. University Press of America.
"The Sustainability of the new Educational Reforms in Morocco"
Paper presented in the Research Symposium of Illinois State University, Normal; April 2004
***Educational Reforms in Morocco and the Question of Sustainability*.**
Co-authored, paper presented in 48th Conference of Comparative International Education Society in Salt lake City, UT in 2004
Educational Reforms in Morocco: New initiatives, new directions, but are they feasible?
Co-authored paper presented at 44th Conference of Comparative International Education Society in Washington DC in 2001.

ADDITIONAL SKILLS

	Languages	***Speaking***	***Reading***
•	Arabic:	S: First language	R: First language
•	English:	S: 5	R: 5
•	French	S: 4	R: 5
•	Spanish	S: 2	R: 3

Information Communication Technology/Media

<u>Computers:</u>
- Office: MS Word, Excel, Publisher, PowerPoint etc
- Web design: Dreamweaver, FrontPage, Flash, etc
- Statistics: Excel and some SPSS experience;
- Graphic Design: Adobe Photoshop, Illustrator;
- Internet

<u>Interactive Radio Instruction (IRI):</u>
- Training scriptwriters,
- Master-planning & scriptwriting for interactive and non-interactive educational programming;
- Audience research;
- Formative evaluation techniques;
- Developing print materials;

Appendix F

Lead Trainer Reports on August 2009 INTALEQ Basic Training

Report on the Consultation Trip to Mukalla, Yemen

August 7 - 13, 2009

Training of Participants in the INTALIQ Project (Science and Math teachers)

Prepared by Saouma BouJaoude

Participants in the training were math and science teachers, supervisors, and school principals from a selected number of schools in Mukalla, Yemen. The schools from which the teachers were selected will participate in the INTALEQ Project. INTALEQ is a partnership involving both U.S. and Yemeni public and private sectors. It provides educators teaching math and science with skills and materials to prepare their students for the 21st century. The project is helping teachers from selected schools learn how to integrate technology into the math, biology, and chemistry classroom and provide them with digital learning resources that fit the Yemeni curriculum.

NATURE OF THE TASKS PERFORMED IN MUKALLA

The task included conducting a workshop based on a manual that was prepared by EDC. The manual covers the first 4 days of the workshop. The fifth day of the workshop involved training participants on setting up accounts on a forum for educators developed by the Project. I was the lead trainer in the first 4 days of the workshop, while Mr. Adel and Mr. Hussein were the lead trainers on the fifth day.

The training team consisted of five members. As mentioned above, I was the lead trainer during the first 4 days while 2 female and 2 male Ministry of Education educators assisted me in the training. On the fifth trainer, I assisted two Ministry of Education trainers from the Department of Educational Recourses who led the activities of the fifth day of the workshop.

A workshop daily schedule (appendix I) was developed by EDC Washington Office and was shared with me prior to the workshop. However, this schedule was adapted to fit the local situation and the fact that some of the activities took longer than planned because of the number and background of participants.

Observations

1. The EDC staff in Yemen exerted their best efforts to make the workshop a success even under the less than ideal conditions existing in the workshop venue.
2. Participants were motivated and interested in the training. The overwhelming majority of participants was eager to learn and seemed ready to start implementing the project. A number of them, however, were apprehensive because of the large numbers of

students per class and the lack of access to computers that are essential for the implementation of the Project.

3. Trainers from the Ministry of Education (MOE) seem to be eager to learn and participate in the training. However, they themselves need focused training rather than be expected to learn how to train just by assisting in the training. Presently, these trainers cannot be given responsibility to run the training without support. Observing the 4 trainers during this workshop showed that they are still teacher than student oriented and not knowledgeable enough about teaching strategies to help others acquire these strategies. One logistical matter is important to mention, specifically the number of MOE trainers at the workshop, whose number was 4 in this workshop. 4 trainers in addition to a lead trainer are too many for a workshop of this type. Involving 4 MOE meaningfully is not feasible because it might create confusion in the workshop.
4. Training venues should be selected carefully and their selection should not be totally left to MOE. There were multiple problems with the venue in which the training took place, including the absence of proper photocopying machines, printers, and other needed equipment, not to mention the problem with access to the Internet and power outages.
5. Training 45 adults in a crowded space reduces the quality of interaction and thus the quality of training especially when the weather is extremely hot and humid. The size of training rooms as well as the availability of tables and appropriate chairs should be carefully considered prior to the training.
6. The Intel applets are very useful and relevant to the grade 10 curriculum. They are easy to use, accessible through the Internet, interactive, and can be used as models that teachers can use to develop their own applets if they are trained to use Flash, for example.
7. The training manual is useful includes very good activities but some sections are not very useful friendly. Moreover, it does not provide teachers with specific strategies to use the applets. A detailed analysis of the manual is provided below.

SPECIFIC OBSERVATIONS ABOUT THE TRAINING MANUAL

Day I

As mentioned above the manual includes very good activities that have the potential to help teachers to implement student-centered science and math activities. However, I have a number of comments and recommendation to improve the manual in an attempt to make it more user friendly and aligned with the Yemeni curriculum.

- ***Day 1: Learning alone and together.*** The rectangles and squares activities are very good. However, I suggest that each be done individually and in cooperative groups so that participants would not say suggest that one activity is easier than the other is and thus could be solved with more ease. In addition, I suggest that trainers be told to provide equal amounts of time for the individual and cooperative work to eliminate time as a factor. If the activity is redesigned as suggested above, then participants could be introduced to an important science process skills, namely controlling of variable. In addition to the rectangle and square activities, participants should be given example from their subject areas where they can use inductive and deductive thinking (actually they could be introduced to the inductive and deductive teaching methods).
- ***Day 1: Jigsaw.*** Again this is an activity with a lot of potential. However, implementing Jigsaw with 45 participants in a crowded room is difficult. Another issue with the way jigsaw was implemented was that it was not very clear that supposed to be done by subject area (which in my opinion is how it should be done). Finally, the MOE trainers were a little confused about implementing Jigsaw as recommended in the manual because they had experienced Jigsaw II in other trainings. Therefore, it should be made clear in the manual that this is a variation of Jigsaw and that other types exist.
- ***Multimedia resources and multiple intelligences.*** I am not sure why multimedia and multiple intelligences were included during the first day. While both topics are important, it is necessary to provide a rationale for including the two topics, but better still, learning about these two topics could have introduced in the context of other activities. Another option would be to design special science and math related instructional activities that incorporate multiple intelligences and multimedia to focus participants' attention on the salient features of the strategy and how it can be used in science and math classrooms.

General suggestions for Day 1

1. Modify the rectangle and square activities as suggested above. Emphasis should not be on strategies to find the answer alone but also on the method used in reaching the solution. This method should be easy to explain to others (to make sure that participants learn how to simplify solutions to be taught to others and to make sure that they have understood the solution.
2. Clarify to participants that there are several ways of implementing Jigsaw to reduce confusion among the different "Jigsaws" as there are well established Jigsaws such as Jigsaw I and II.
3. Integrate Multiple Intelligences in one of the activities of the workshop (such as the jigsaw) to make it more meaningful to participants.
4. Incorporate the handouts within the training manual to make it more reader friendly. Also, separate all documents to be photocopied to simplify the task of the trainers and make sure the training venue has all printable manuals.

Day II (Project-based learning)

The second day of the workshop was focused mainly on project-based learning. For this purpose, participants worked in cooperative groups to perform 4 tasks distributed over 4 stations. The implication of this activity was very good. This activity required participants to collect data from the stations to formulate an argument regarding banning smoking in public places. The following are suggestions to improve the activity:

1. The activity could be spread over two days. During the first day, the tasks and stations are introduced during an afternoon session then participants collect data from the applets and the Internet and design the questionnaires/surveys. Then they take the surveys home and collect data from 10 - 20 people per questionnaire. During the morning session of the second day, participants use excel to log and analyze the data and to produce tables and charts. They them prepare a power point presentation, present it and get feedback on it. Finally, participants should be given time to plan a project. This will take the same number of hours as suggested in the training manual but will allow participants to collect real data, analyze it, and use it in their oral reports. Additionally, it allows participants to use math explicitly thus show them how to integrate science, math, and technology.
2. The reflections that follow the problem-based activity (the activity entitled "review and reflections" is confusing as it starts with 4 roles followed by

questions. It is not clear for what the roles are meant. These reflections are followed by more focused and useful reviews and reflections (definition and characteristics of project-based learning, role of student, role of teacher). These reflection are excellent. However, the role of the **supervisor and the principal should be included to the roles discussed** in the activity. Finally, I suggest that discussions be limited to the definition of project-based learning, roles of student, teachers, supervisors and principal, and challenges faced in implementing project-based learning. The rest of the activities/discussions did not seem relevant to participants.

3. There is information about the peer feedback in the materials of day 2. However, it is not clear how this is integrated in the activities of the day. In addition, there is a handout about using student-centered teaching at Harvard University that did not seem relevant to participants.

Days III and IV(from planning to practice)

Days 3 and 4 aim to provide participants with opportunities to plan and present a lesson using the skills acquired from the first two days. This aim is very valid and the activities of the day are very useful. The following comments are provided in an attempt to improve the day.

1. Peer feedback activities planned during the two days are very good (this is where the peer feedback handout is useful).
2. Most of the teachers have experience in planning lessons. Therefore, time should not be spent on showing them how to plan. The trainers should focus on helping participants to write lesson plans in the subject areas.
3. The materials provided to trainers for days 3 and 4 are very detailed and possibly confusing. These should be simplified and made more user friendly, especially if MOE trainers will be using this manual to train others.
4. A rubric for evaluating teaching needs to be developed and used when giving feedback to participants who are presenting their lessons.

GENERAL COMMENTS

1. The activities provided in the manual have a lot of potential but need to be carefully implemented with a clear focus on science, math, and technology (especially using the applets). In this respect, participants need to be provided with training on how to integrate the applets in their teaching. There are no activities focused on using the applets. For example, should they be used as lesson summaries? During the lesson?

As introductory motivating activities? We showed participants how two of the MOE trainers used the applets in their classes along with student-centered teaching activities. However, this was not sufficient because it was not planned carefully as part of the workshop and participants did not have the time to discuss these experiences in detail because of time constraints.

2. The activities included in the manual need more than 4 days to be completed. At least five days are needed to complete all activities especially with large groups of trainees from 4 different subject areas. If dive days are all the time available, then the manual should e designed for 4.5 days and ***Curriki*** activities be implemented in half a day.
3. All workshop participants should have sufficient computer skills as a condition for participating in the workshop. Participants with no or minimal computer skills will not benefit from the activities planned in the workshops.
4. The training manual should be designed in such a way as to integrate the guidelines for trainers with the activities. This way the manual would become a “training story” that is easy to follow and implement. In addition, all handouts should be provided separately to make it easy to copy and distribute. Suggestions provided above are meant to help to improve the quality of the manual with the aim of making it user0friendly.
5. There needs to be activities that are based on the Grade 10 biology, chemistry, physics, and math curricula to increase the credibility of the methods and applets and provide the teachers with model activities that they can emulate.
6. The manual looks like an unfinished product. It needs to be more organized, paginated, and user friendly.
7. The schedule should include a daily morning review of what has been covered the previous day. This will keep the focus on the main themes and assures that all participants have acquired the necessary skills and knowledge.

Appendix I

برنامج إنطلق :ورشة العمل حول استخدام الوسائط المتعددة في تعزيز التعلّم المتمحور حول الطالب : -12 اغسطس 2009

الزمن	النشاط
	اليوم الأول (2009/8/8)
9:05 - 8:00	تعارف و مقدمة للمشروع و مقدمة للورشة
10:05 - 9:05	نشاط 1: التعلم بمفردك والتعلم معا
10:20 -10:05	استراحة
11:45 -10:20	نشاط 2: التعرف إلى الأنشطة التفاعلية المحوسبة (الجيكسو)
12:00 - 11:45	نبذة حول التعلّم بالوسائط المتعددة
1:00 -12:00	استراحة الصلاة والغداء
2:30 -1:00	نشاط 3: الاستقراء
3:00 -2:30	تأملات في أنشطة اليوم
	اليوم الثاني (2009/8/9)
12:00-8:00	نشاط 4: مشروع "زوبعة في الدخان" -- مقدمة ومحطات العمل
1:00 -12:00	الصلاة والغداء
2:30 -1:00	متابعة نشاط 4: إعداد عروض مجموعات العمل
3:00 -2:30	تأملات في أنشطة اليوم
	اليوم الثالث (2009/8/10)
8:45 -8:00	مناقشة: التعلّم المبني على المشروع
9:30 -8:45	نشاط 5 :مناقشة مجموعات المباحث حول أنشطة التعلّم المناسبة للمناهج الدراسية
9:45 -9:30	استراحة
1:00 – 9:45	نشاط 6: مشاريع مرتبطة بالمناهج الدراسية
2:00 – 1:00	الصلاة والغداء
3:00 – 2:00	نشاط 6: مشاريع مرتبطة بالمناهج الدراسية (تابع)
	اليوم الرابع (2009/8/11)
9:00 – 8:00	نشاط 7: نشاط حر: متابعة استكشاف الأنشطة التفاعلية المحوسبة
10:00 – 9:00	نشاط 8: تصميم أنشطة تعلّم مرتبطة بالمناهج الدراسية
10:15 -10:00	استراحة
12:00 - 10:30	متابعة نشاط 8 : تصميم أنشطة تعلّم مرتبطة بالمناهج الدراسية
1:00 – 12:00	الصلاة والغداء
2:30 – 1:00	نشاط 9: تطوير خطط العمل المدرسية
3:00 – 2:30	تأملات في الورشة والختام
	اليو م الخامس (2009/8/12)
12:00 – 8:00	Curriki training
12-1:00	الغداء
1:00	توزيع الشهادات

Report on the Consultation Trip to Aden, Yemen

August 13-20 2009

Training of Participants in the INTALIQ Project

Prepared by Norma Ghamrawi

Feedback on Yemen Training

1. Participants need to know the basics of the computer so that they can maximize their benefits from this training. It turned out that more than half of the participants in my group did not know “anything” about computers!
2. The Agenda of the training days is over packed leaving little time for participants to work on their own lessons. This is a major problem as it is mostly important to have participants demonstrate the skills and competencies acquired during training. Situational assistance at this level would play a crucial role for the sustainability of the training.
3. Jigsaw was highly appreciated by participants but I believe that it should’ve been applied in another context, apart from Intel activities.
4. Speaking about using media in education, an interlude on ‘multiple intelligences’ was provided. I believe an interlude on ‘learning styles’ would have served better with the time limitation. The idea of multiple intelligences is quite attractive to participants and hence tends to make them get inclined to spend a lot of time asking about various intelligences.
5. Inductive/Deductive learning was very attractive to learners; however, more time was needed so that participants can try out immediately applying this approach on their own lessons by selecting examples of lessons they taught normally in their classes and classifying them as deductive/inductive and suggesting means to convert these from one form to another.
6. The agenda of day 1; though it was very meaningful to participants who expressed admiration and great benefit from its activities; seems to be designed for somebody who has a better background in constructivist learning.
7. Day 2 agenda is very beneficial and well planned to teach two concepts via one activity; yet more time is needed. Participants would need the whole day moving from one station to another; given their lack of computer literacy! Two hours from the third day would be needed for the purpose of presentations and reflecting on Jigsaw method.

8. As mentioned earlier, more time should’ve been made available for participants to try out their own lessons and to exchange lessons prepared as well.
9. A lot of details have been given about critical friend yet nothing was provided about self evaluation like handling participants with a checklist that they may use to ensure that the lessons they prepared fit into what was required (the rubric would not fulfill this purpose)
10. Finally, the training manual is over-detailed making the reader get confused in some of its parts!

Report on the Consultation Trip to Mukalla, Yemen

August 3-17, 2009

Training of Participants in the INTALIQ Project

Prepared by Abdechafi Boubkir

During this recent STTA, I conducted several tasks to help move forward the INTALEQ project. The following is a summary of the main results achieved:

1. Developed materials for the training on the Intaleq/Curriki website for the teachers;
2. Led the training of the MOE core team of trainers on the Intaleq/Curriki website for the teachers;
3. Led the training of the Sana'a teachers on the Intaleq/Curriki website for the teachers;
4. Led the training for the first two days of the Aden teachers;
5. Attended the Advisory Committee meeting and helped with the translation;
6. Contributed to meetings with MOE;
7. Compiled the training materials that Dr. Rachel Christina had sent, and assisted in its printing;
8. Managed the financial aspects of the training in Sana'a;

This report presents the achievements during this STTA and observations on different aspects of the trip.

THE TRAINING EVENTS:

The main task for this short technical assistance trip was to develop materials of, and to deliver training on, the use of the Intaleq/Curriki website (http://intaleq.edc.org/ar). Following an initial discussion with Drs. Helen Boyle and Bob Spielvogel that provided information about the site and its importance within the project, I developed materials for the training. Attached with this report are the PowerPoint Presentation in Arabic used in the training, the English version of the presentation, the accompanying guide for the presentation, also in Arabic and English. The materials were used in all subsequent training events: the training of the trainers, the teachers in Sana'a and the teachers in Aden.

The training of the team of the Core Trainers from the MOE took place on August 6th 2009. Three members of the Core team attended the training, while Mr. Al Haimi was present for the opening. Since the training took place in the Ministry office, at least 4 other people showed up in the meeting and remained in for the rest of the training. Given their presence had no major financial implication for the project, we decided to let them in in order to enrich group work. Of the Core Team members, Adel Al Bazaa and Mohamed Abdulghaffar were probably the best participants. They worked well either individually or in groups.

The training of the teachers in Sana'a took place from August 10 to August 13 in Assabeen School. Prior to the event, Helen Boyle, Ameen Al-Kaderi and I met with the Director General of Education in Sana'a, Mr. Mohamed Al Fadhli. Ameen and I followed up with meetings with the Director of Training in the Office of Education, Mr. Nasser Al Homam. These meetings ensured that the teachers were informed of the training, and that the Office of Education was involved. During the training, the Office of Education of Sana'a was represented by Mr. Mohamed Sharaf.

The participation of the teachers in the training was excellent. Not only did they demonstrate what they had learned in the previous training on the use of the digital materials and the active pedagogy, but also they were very eager to learn more about the Intaleq website.

During the four days of training, the teachers created their accounts in the Intaleq website and used this site to communicate with one another, post lesson plans and some journals. They also reviewed some of their colleagues' postings and commented on them. Finally, they participants took part in a review of some components of the active learning methodology. The participants started with general postings to introduce themselves and to wish success to this training, but then moved to the more serious posting of lesson plans and comments about their teaching practices. In addition, the participants specifically requested a review of the Jigsaw method of conducting a learning activity in the classroom.

As the teachers got more comfortable with the site, they started voicing some concerns about some of its limitations. Individually and collectively, they made some comments which I can summarize in three main points that might improve the site and its usage:

1. The inability to upload documents such as Word and PowerPoint. This is of great important to them since a) their lesson plans are prepared in computers, b)their lesson plans contain graphics which the site does not support yet;

2. The difficulty to change fonts and sizes in the website. This can happen only if the teacher masters HTML language which is cumbersome. The site, for the time being, supports only one type of fonts;

3. The desire to "Know" the participants who are online at any particular moment. This is possible in many forums where one can see the list of the people online at that moment. This information usually helps people communicate well with each other as they receive instant messages from each other about the topic they discuss.

I second the first two suggestions that the teachers came up with. There is no denying that the use of the website is still not very smooth. For example, teachers have to copy and paste content of their lesson plans on the site. When they do that, they lose all formatting as the site does not support different fonts and other editing features. Also, many teachers include graphics in their lessons and lesson plans. This feature is also not supported by the site. The third suggestion is good but not very essential, in my opinion.

After the training Sana'a, I flew to Aden to lead the first two days of the initial training for teachers. Unlike Sana'a, this is the first time the teachers will receive training. Along with three MOE trainers, I led the training in the first two days paving the way for Ms. Hala Taher to continue the training on the third day onwards.

Unlike the other sites, the schedule of the training in Aden had to be modified because the lead trainer, Ms. Hala Taher, would arrive on Monday morning. I led the first day of training on the use of the Intaleq/Curriki website for the teachers while the three MOE trainers took the lead on the second day. To ensure that teachers benefit the most from the training, we started by asking all teachers to access their emails or they create new ones. A large majority of the teachers did not have an email or they forgot their passwords, while only a few had been using their emails well.

The training on the use of the website took place and the teachers created their accounts, and started posting some journals. However, due to the short period of time reserved for the activity, teachers did not post their lesson plans during the training. However, they were initiated on how to do it.

The MOE trainers took the lead in training the participants on certain elements of the materials. Ms. Maysouna and Ms. Fatima presented "Learning Alone and Learning Together, and Mr. Houssein initiated the participants on "Inductive Learning".

The three MOE trainers performed at a higher level in this training than those in the Sana'a training. My guess is that 1) they have benefited from the training they had received in January; 2) they have learned by doing through the training in Sana'a in February, and 3) they learned from their training experience in Mukalla with Dr. Saouma BouJaoude. They specifically informed me that they had liked working with him and they had learned quite a lot from his way of training.

At the time of writing this report (August 30th), there are 160 registered users in the Intaleq website from teachers and MOE trainers. There are also four EDC and one MOE site administrators. Mr. Mohamed Abdulghaffar from the MOE and Mr. Ameen Al-Kaderi have been trained on using the Site Administration part of the portal to conduct such tasks as approving new members, fixing problems with accounts, monitoring the content of the website and taking action if necessary.

OTHER ACTIVITIES:

Among the other activities I conducted during this STTA was attending several meetings. I took part in the Advisory Committee Meeting where I translated the discussion point between the participants. I also took parts in several other meetings, namely, the lunch meeting with Mr. Ali Al Haimi, the meeting with the DG of Education in Sana'a, a meeting with Ms. Hala Taher to debrief her on the trainings of the first two days in Aden, and finally several meetings with other EDCers. In addition, I conducted some administrative tasks such as disbursing per diems to the participants in Sana'a and working with some local translators on the translation of some documents.

COMMENTS:

- The MOE tasked Mr. Mohamed Abdulghaffar and Mr. Diyaa Al Mekhlafi to co-lead the training IN Sana'a. While Mr. Mohamed Abdulghaffar is part of the Core Team and had participated in the previous training in February, Mr. Al Mekhlafi is not. His participation was more to represent the MOE.

- Among the several tasks that we asked the teachers in Sana'a to conduct was group work to demonstrate the uses of the techniques that they had learned during the previous training. The purpose was to see how the teachers used the knowledge in their daily practices. This, in turn, would shed light on the techniques mastered or not by the teachers. It was clear that teachers mastered the use of the “Learning Stations” method as most of them listed examples of how they used that method in their different lessons throughout the four subjects. In contrast, most teachers had difficulty with the “Jigsaw” method.

- The MOE trainers in Aden performed well in the training event. It might be very beneficial for EDC to capitalize on the improvement of the performance of these trainers, and continue to build their capacity as they showed more promise than some other MOE trainers.

- The uses of the Intaleq website were appreciated by the teachers. However, some technical improvements (please see above) are needed for the website so as to encourage the teachers more and more to participate.

Report on the Consultation Trip to Aden, Yemen

August 16-20 2009

Training of Participants in the INTALIQ Project

Prepared by Hala Taher

INTALEQ is a partnership involving both U.S. and Yemeni public and private sectors. It provides educators teaching math and science with skills and materials to prepare their students for the 21st century. The project is helping teachers from selected schools learn how to integrate technology into the math, biology, and chemistry classroom and provide them with digital learning resources that fit the Yemeni curriculum. The project also targets educational supervisors and school principals and aims to equip them with leadership skills to understand and support the innovation brought to schools.*

[**Quoted from Dr. Saouma's report*]

Task

The task included reviewing and revising training materials and leading a 3 day workshop to around 36 participating teachers, education supervisors, schools principals and Ministry educators.

The training focused on equipping educators with skills and knowledge to integrate INTALEQ Interactives into an active learner centered instructions.

Training Support Team

The support team consisted of 5 members, including:

- Ameen Al-Kaderi, EDC Coordinator, Yemen
- Maysoona Obeidli and Fatima, Science Teachers, Ministry of Education
- Hussein Turki, Biology Supervisor, Ministry of Education
- Mustafa, Lab Technician, Lebaneese University, Aden

Observations

8. The EDC Coordinator in Yemen and the Ministry team were very supportive, highly competent, committed, cooperative, knowledgeable of the task and goals of the workshops and did their very best to make the workshop a success. Both had good experience from participating in the Sana's and Mukalla's workshops.
9. The EDC Coordinator demonstrated strong leadership in managing day to day operations and in making the trip such a convenient one.

10. The Lab was well equipped with over 20 computers connected to the Internet and the Lab Technician was very competent in ensuring smooth operation during the training.
11. Participants were motivated and the majority of them had previous ICT skills; the participants' final lesson plans reflect good understanding of the presented strategies and ability to implementing the activities with students. Lesson plans and group discussion also revealed participants' understanding of the challenges that they might face in their classes and ability to work out some solutions.
12. The training venue was good; it had convenient space for group discussions, breakout sessions, full class presentations and lab work. However, the computer lab setup was hardly adequate for group work or instructors' support and movement. Moreover, the lab working hours didn't allow for additional technology support and practice.

Recommendations:

Participants Support: participants became aware of the challenges they might face in their classes when applying the new technology including the need for thorough preparations and planning, detailed activity design and a well developed classroom, time and resource management plan. They also addressed, in their lesson plans, issues like big number of students and time constraints. However, this is just the first step and they will need extensive support to help them refine their lesson plans to better address issues above. They would also benefit from working as a team in each school to plan, rehearse and implement their first activities.

Full Semester Plan: Participants only had a chance to integrate one set of Interactives in their curriculum; A follow-up meeting is needed to provide them with an opportunity to develop a full semester plan. The Semester Plan template developed and used in Sana's training can serve this purpose. Moreover, given that there will be more time allocated to this task than the time used in Sana's training, it is highly recommended that additional activities are developed were teachers not only plan when and how/strategies they will use to integrate Interactives but also to explain why and what specific goals/ learning outcomes are expected from using selected interactive(s), assessment tools, time allocation, needed preparations and to share with their colleagues a brief overview of the planned activities.

Follow-up: Supervisors can play a big role in supporting and facilitating implementation and teachers' group work both at the school level and between

schools. However, supervisors need at least during the first year to plan and implement activities side by side with teachers; so that they themselves experience what it needs to ensure successful implementation.

Specific Observations about the Training and Training Manual

The training agenda was modified to allow time for teachers to explore and interact with the INTALEQ Interactives and experience Jigsaw strategy. The modified agenda below reflects the changes to the agenda.

Day1

2:00 – 8:00 pm.

Exploring INTALEQ Interactives/ Jigsaw activity

Interactive Learning Stations, "Up in the Smoke" activity – part 1

Day 2

8:00 – 3:00 pm.

Learning Stations "Up in the Smoke" activity, part 2

Participants' lesson plans, part 1

Day 3

8:00 – 3:00

Collaborative Learning

Critical Friend

Participants' lesson plan, part 2

Closing and Certificates

Jigsaw Materials

The current materials provide good background information and guidelines on how to structure the activity. We used only two reflection sessions, the first for participants to reflect and explain the method, core principal and how it is useful. The second to think individually and then discuss in small groups then share with the class ideas for implementing the strategy in their instructions (Think – Pair - Share). Then we discussed and presented variations in the method.

Learning Stations

- The material is very well organized and detailed; few changes below were needed:
- Changed the time for each station to be 35 minute instead of 45 .
- Modified the reflection questions to include only 3 items below

“

1. في اعتقادك، أي من محطات الدراسة الأربع كانت الأكثر فائدة، ولماذا؟ أي من محطات الدراسة الأربعة كانت الأقل فائدة، ولماذا؟
2. تحديداً، ما الذي تعلمته نتيجة لمشاركتك في هذا النشاط (اذكر أهم ثلاث نقاط برأيك)؟
3. هل يمثل هذا النشاط ممارسة يمكن تكرارها مع الطلاب؟ إذا كانت الإجابة بنعم فما هي التعديلات التي ستقوم بإضافتها؟

“

- To present the results of the groups’ reflection we used one form of a gallery walk followed by a full class quick discussion.

- Shared the “Presentation Rubric” with the participants when discussing notes on how to prepare the group presentations. Also discussed briefly how and why rubrics can be useful and asked them to use it when observing others’ presentations and to base their feedback on that. *Was quite successful*.

- Changed Station 2 title to “Public Survey”

Collaborative and Project Based Learning

In the material there are two files with the same content, I suggest add the pages to the document “Module 2 Active Learning with ICTs Yemen_AR”.

I also could not find trainer’s guide for the activity “Project-Oriented Learning”. We added one slide below (slide# 2) and asked participants to think of the questions as homework, on the next day they discussed in small groups their findings, and then further elaborated with the full class. At the end of the session we presented the remaining slides focusing mainly on the items that were missing from the discussion.

We added principals and supervisors role as a question would be good to add a slide elaborating in their expected role.

التعلّم المبني على المشروع

- كيف يتم تنظيم المشروع (الموضوع، طبيعة الأنشطة، المنتج، وسائل البحث، الخ)
- دور الطالب
- دور المعلم
- دور المدير والموجه
- الفوائد التعليمية للطالب

Critical Friend

No materials found, it is good to add a text protocol which a trainer can use to help participants read and think deeply about the main ideas in the document.

We used a simple one and it was good.

Lesson Plans:

The materials are detailed enough and provide good guidelines on how to manage this activity [**however, I agree with Dr. Saouma that the materials might be over detailed and confusing*]. Moreover, it is good to stress few points we found useful, mainly:

- After introducing the activity, elicit some answers on what constitutes a good topic selection. Give participants time to brainstorm in small groups some ideas, and then to share in their full subject group using any simple protocol for constructive feedback.
- Assign time for participants to further explore Interactives, use this time to make sure all participants are confident using the Interactives. Encourage them to work individually and to explore as much as they can of their subject Interactives.
- Instructors need to carefully monitor groups' work, challenge their design and verify the design against the set objectives. It is also important to confer with each group individually and ask them to include detailed directions for students, ask them to explain how they are going to implement their design with their students, how they are going to manage time, monitor students work, etc.
- Peer Feedback and Rehearsal: The method explained in the materials "Planning into Practice", activity 3; is quite complicated and requires more time than can be allocated. Instead, peer feedback can be scheduled for all groups together; instructor can provide ongoing feedback during the group work, and group rehearsals can be

scheduled consecutively. If the number of groups is big (6 or more); rehearsal can be planned in two separate rooms with the help of the support staff.

Appendix G

Percentile Report on Student Learning

Table #. Percentile Distribution for Subject Mean Gain Scores by Intervention and Control Schools

		N	*M*	*SD*	*Percentiles*								
					10th	20th	30th	40th	50th	60th	70th	80th	90th
Physics	Intervention	774	9.40	5.42	2.00	5.00	7.00	9.00	10.00	11.00	12.00	13.00	15.00
	Control	297	.40	4.99	-6.00	-3.40	-2.00	-1.00	1.00	1.00	3.00	5.00	7.00
Math	Intervention	767	9.40	4.72	3.00	6.00	7.00	9.00	10.00	11.00	12.00	13.00	15.00
	Control	272	1.41	4.33	-4.00	-2.00	-1.00	0.00	1.00	2.00	3.00	5.00	7.00
Biology	Intervention	769	8.50	5.18	2.00	4.00	6.00	7.00	8.00	10.00	12.00	13.00	15.00
	Control	260	0.18	4.82	-6.00	-3.00	-2.00	-1.00	0.00	1.00	2.00	4.00	6.00
Chemistry	Intervention	761	8.89	5.31	2.00	4.00	6.00	7.00	9.00	11.00	12.00	13.00	15.00
	Control	320	0.71	6.62	-9.00	-4.00	-2.00	0.00	1.00	3.00	4.00	6.00	9.00

A major metric of the INTALEQ project was that "60% of students in 10th grade will have improved their scores in math and science after participating in the program." To check for the achievement of this goal, the percentile distribution of participant students' gain scores from pretest to posttest in the four subject areas was calculated (see Table #). "Percentile ranks or percentile scores are defined with respect to a norm or reference group. As such, percentile scores provide a convenient way to convey an individual's standing on a test relative to others" (Ender, 1998, p.1).

As Table # shows, at the 40th percentile, the gain scores for INTALEQ students were 9 points in Physics and Math, and 7 points in Biology and Chemistry. In other words, 60% of the INTALEQ 10th graders had gain scores equal or greater than 9 points in Physics and Math, and 7 points in Biology and Chemistry. Given that test scores ranged from 0 to 30 points, the observed gain scores for 60% of INTALEQ students in Biology and Chemistry showed a 23% increase, while those in Physics and Math showed a 30% increase. Both gains are substantial by any measure of learning. Thus, it can be claimed that the INTALEQ program had substantial effects on the students' performance in the four target subject areas.

Reference

Ender, P. (1998). *The distribution of percentiles*. Retrieved: November 11, 2009, from: http://www.gseis.ucla.edu/courses/ed230a2/percentile.html

Appendix H

Summary Report on Sana'a Teacher Interviews

February – May Semester 2009

INTALEQ Teacher Survey

Sana'a, Yemen

July 2009

1. What are the teaching methods that you prefer to use when teaching others? Why do you prefer such methods?

   26 out of 29 teachers said that they using inductive learning approach and cooperative learning strategies with all its concomitant techniques (leaning stations, jigsaw, group work, pair work, group discussions and role-play). Teacher lesson plans supported these assertions.

2. Compare your teaching behavior before the INTALEQ training and after such training. Are there any differences? If so, what are they?

   26 out of 29 acknowledged differences. The top three differences reported are:

   1. They have become well aware of technology as source of teaching and learning resources (14 were common on this).
   2. They gained the necessary skills to customize internet resources to best serve their lesson activities (26 teachers were common on this).
   3. Active learning strategies require commuting between the classrooms, computer lab, science lab, library and school garden to implement the lesson activities. Such commuting contributed in creating good learning environment and make the students to enjoy the lesson (22 teachers were common on this).

3. How has the use of digital learning objects (and technology in general) enhanced (and/or subtracted from) your teaching? Please explain.

   26 out of the 29 were common on the following:

   - Teachers think that the use of modern technologies in the presentation of the lessons has increased their ability to diversify the sources of learning and to design activities in line with the curricular objectives by customizing the teaching resources found on the internet to better serve their teaching purposes.
   - Continuous use of PC and Internet has made them skillful in basic computer skills.
   - Technology helped them to create more interactive classroom sessions.

- Teachers said they use the digital materials to improve their abilities to teach difficult topics. (The digital materials helped them explain the lessons that are difficult for students to understand when presented using the traditional way.)
- As for the students, teachers reported that the use of technology in general and LOs in particular, resulted in an improvement in the educational level of students and their learning gains, that was reflected and seen clearly in the achievements in their monthly tests. In spite of the problems encountered in the beginning, such as lack of skepticism on the part of some students who feared the use of LOs would not leave time to complete the curriculum plan, teachers reported that the LOs attracted them. Teachers reported students were eager to use the LOs whenever they were given the chance to get into the computer lab, to consolidate their findings and enhance their understanding for the concept that they found difficult to understand when presented on the blackboard.
- Teachers stated that LOs enable the students to involve more than one sense (listen, watch and do). Furthermore, students have become used to learning activities inside and outside the classroom, using more hands-on approaches and more than one tool (internet, flashes, CDs or down loads as hard copies.).

19 of the 26 teachers reported:

- Using the digital materials to introduce the lessons, to motivate the students and get them ready for the lesson, and more importantly to demonstrate scientific facts and concepts. The way the digital materials were designed and being backed up with sound and simulations helps the teachers to diversify their techniques in lesson presentations especially for teaching the hard to teach concepts. LOs improved teachers capacities to design lessons using the presentations (PowerPoint) so that they can create similar LOs the topics that haven't illustrative LOs, especially the topics that are difficult, and can be only explained with an explanatory and visual aids, has enabled teachers to simulate the experiments which its implementations lacks the necessary tools that cannot provide the necessary planning system,
- Seeing increased interaction between teachers and students due to the LOs.

4. Have the digital learning objects (and technology in general) enhanced or hindered students' learning? In what ways?

Twenty-six teachers mentioned that the LOs contributed to the students learning enhancement. However, three said they tend to stick to their traditional ways of teaching because they feel there are not sufficient resources (computers, etc) to make the use of the LOs very smooth. The top reasons given for saying the learning objects contribute to student learning were:

- Teachers use the digital materials to improve their abilities to teach. (They particularly liked the digital materials to explain the lessons that are difficult for students to understand if they are presented using the traditional methods.) They use the LOs to introduce the lessons, motivate the students and get them ready for the lesson, and

more importantly to demonstrate scientific facts and concepts. The way the digital materials were designed, using sound and simulation, helps the teachers to diversify their techniques in lesson presentations and in teaching the difficult concepts.

5. LOs improved teachers' capacities to design lessons using the presentations What feedback can you give the INTALEQ project staff and the MOE to make it even more effective and responsive to the needs of students and teachers?

    1. Teachers should be provided the necessary equipments and materials that will enable them to continue using the active learning strategies such as increasing the number of PCs in the schools, audio and visual educational aids, and stationary materials (29).
    2. Teachers should be provided with laptops, cameras (24).
    3. Increase the number of LOs for all the math and science subjects (29).

Appendix I

A Workshop Daily Schedule

برنامج إنطلق :ورشة العمل حول استخدام الوسائط المتعددة في تعزيز التعلّم المتمحور حول الطالب: -12 اغسطس 2009

الزمن	النشاط
	اليوم الأول (2009/8/8)
9:05 - 8:00	تعارف و مقدمة للمشروع و مقدمة للورشة
10:05 - 9:05	نشاط 1: التعلم بمفردك والتعلم معا
10:20 -10:05	استراحة
11:45 -10:20	نشاط 2: التعرف إلى الأنشطة التفاعلية المحوسبة (الجيكسو)
12:00 - 11:45	نبذة حول التعلّم بالوسائط المتعددة
1:00 -12:00	استراحة الصلاة والغداء
2:30 -1:00	نشاط 3: الاستقراء
3:00 -2:30	تأملات في أنشطة اليوم
	اليوم الثاني (2009/8/9)
12:00-8:00	نشاط 4: مشروع "زوبعة في الدخان" -- مقدمة ومحطات العمل
1:00 -12:00	الصلاة والغداء
2:30 -1:00	متابعة نشاط 4: إعداد عروض مجموعات العمل
3:00 -2:30	تأملات في أنشطة اليوم
	اليوم الثالث (2009/8/10)
8:45 -8:00	مناقشة: التعلّم المبني على المشروع
9:30 -8:45	نشاط 5 :مناقشة مجموعات المباحث حول أنشطة التعلّم المناسبة للمناهج الدراسية
9:45 -9:30	استراحة
1:00 – 9:45	نشاط 6: مشاريع مرتبطة بالمناهج الدراسية

2:00 – 1:00	الصلاة والغداء
3:00 – 2:00	نشاط 6: مشاريع مرتبطة بالمناهج الدراسية (تابع)
اليوم الرابع (2009/8/11)	
9:00 – 8:00	نشاط 7: نشاط حر: متابعة استكشاف الأنشطة التفاعلية المحوسبة
10:00 – 9:00	نشاط 8: تصميم أنشطة تعلّم مرتبطة بالمناهج الدراسية
10:15 -10:00	استراحة
12:00 - 10:30	متابعة نشاط 8 : تصميم أنشطة تعلّم مرتبطة بالمناهج الدراسية
1:00 – 12:00	الصلاة والغداء
2:30 – 1:00	نشاط 9: تطوير خطط العمل المدرسية
3:00 – 2:30	تأملات في الورشة والختام
	اليو م الخامس (2009/8/12)
12:00 – 8:00	Curriki training
12-1:00	الغداء
1:00	توزيع الشهادات

Appendix J

Report on Number of "Hits" to INTALEQ Portal Site

http://staff.edc.org/webstats/intaleq/2009/08%20to%2010/