# Implementation of the *Learning for Performance* Approach at the Gao Nursing School in Mali:
Final Report

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*The views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government.*

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# List of Acronyms

| | |
|---|---|
| ALK | Acceptable Level of Knowledge |
| ANC | Antenatal Care |
| BCC | Behavior Change Communication |
| CFTSS | Training Center for Social Workers and Health Technicians |
| df | Degrees of Freedom |
| EIG | Gao Nursing School (*Ecole des Infirmiers de Gao*) |
| EmNC | Emergency Newborn Care |
| EmONC | Emergency Obstetrical and Neonatal Care |
| ENC | Essential Newborn Care |
| FP | Family Planning |
| IMCI | Integrated Management of Childhood Illnesses |
| IP | Infection Prevention |
| INFSS | National Training Institute in Health Sciences |
| *LFP* | *Learning for Performance* |
| RH | Reproductive Health |
| STI | Sexually Transmitted Infection |
| USAID | United States Agency for International Development |

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# Executive Summary

In the context of the United States Agency for International Development's comprehensive support to the Gao Nursing School (*Ecoles des Infirmiers de Gao*, or EIG) to address the challenges resulting from the lack of skilled human resources for health in the northern regions of Mali, a development plan for new modules in the areas of reproductive health/family planning (RH/FP) and child health (0-5 years old) was initiated in 2007 through the Capacity Project. This intervention aimed to improve the content of the EIG pre-service training curricula by using the *Learning for Performance* (*LFP*) approach developed by IntraHealth International.

The intervention involved six key stages: the identification of needs and/or inadequacies; the design of new modules; the training of the EIG teachers/supervisors in selected areas of RH/FP and child survival; the training of students; and the monitoring of the learning process. The Project assessed this intervention in November 2008 in order to document the *LFP*'s applicability in the development of training modules in the context of Mali, as well as the efficiency of the new modules in terms of improvement in the level of skills and knowledge displayed by the students who received the training. Specifically, the objectives of this evaluation were to:

1. Describe the modules' adaptation and implementation process
2. Measure the impact of the new RH/FP modules on the students' skills and knowledge
3. Measure the level of satisfaction among students, teachers, preceptors and managers with the learning intervention (process and results).

The evaluation focused on all those who had been involved in the new modules' design and implementation process. The information was collected through in-depth interviews and a skills and knowledge test conducted among students. There were limitations in the evaluation; third-year students received RH/FP and child health training during an intensive training session that differed from the conditions in which pre-service students will be learning this information in the future; due to time constraints, all aspects of the new modules were not fully covered during the intensive training session—this may have affected the pre- and post-test results of the EIG students who took part in the study. The very small size of the sample group was another constraint—this issue was addressed by choosing the student's t-test in order to create the statistics.

Pre-test and post-test data show how efficient the new modules were in improving the level of skills and knowledge among teachers/preceptors and students. The data analysis showed that the midwifery students reached an average total knowledge score of 51% at the pre-test and 66% at the post-test, thus displaying a 29% improvement rate. Obstetrical nursing students reached an average score of 31% at the pre-test and 52% at the post-test, thus boasting a 64.5% improvement rate. While these improvements are impressive, neither group reached the acceptable level of knowledge set at 70%. It should be noted, however, that such results are reasonable given constraints of implementation described above such as training of students during an intensive training session and the fact that all contents were not fully covered.

When comparing these results with the students from two other schools (Training Center for Social Workers and Health Technicians [CFTSS] in Ségou and National Training Institute in Health Sciences [INFSS] in Sikasso) that did not receive the LFP intervention, the Capacity Project/Mali can note that, in all the assessed areas, the midwives and obstetrical nurses from the EIG achieved much higher scores than the midwives of INFSS in Sikasso and the obstetrical nurses of CFTSS in Ségou after the intervention. This was true regardless of what area was considered and this difference was statistically significant.

The analysis of collected information showed that the level of satisfaction with the learning intervention among students, teachers, preceptors and managers was high for all the participants in the different stages of the new modules' design and implementation. All stakeholders felt the need to harmonize the new teaching methods and the content of courses taught at the EIG. In addition, conditions were favorable for the development of new modules: stakeholders reached consensus regarding the areas to be covered by the new modules; the leadership of EIG sought to strengthen the school's capacity to deliver high quality teaching and the teachers were involved and willing to improve the way they taught.

The Capacity Project/Mali detected no major problems during the implementation of the new modules. This can be explained by the involvement and the adequate preparation of trainers/supervisors. Here are some of the lessons learned from this process:

- The *LFP* approach fosters interactivity between the trainers and the people receiving the training, and it spurs students' interest in the classes.
- The teachers' and preceptors' teamwork helps correct inadequacies and strengthen the bonds between people.
- The availability of instructional materials, computer tools and an appropriate work environment is crucial to high quality training.

The implementation of the new modules helped emphasize some of the inadequacies within the EIG training system, previously revealed during the initial needs evaluation. The Capacity Project/Mali is discussing these with EIG management in order to address them adequately. For instance, there is no formal consultation mechanism between teachers and clinical preceptors in order to share information regarding students' practices. The Project/Mali also noted other gaps such as the irregularity of supervisory visits for students at practicum sites and the lack of training for teachers and supervisors in the areas of FP and emergency obstetrical and neonatal care (EmONC). Finally, the insufficiency and sometimes the absence of instructional materials in the areas of FP, antenatal care and emergency newborn care have hindered the training.

Overall, the main stakeholders involved in the modules' development and implementation had a favorable perception of the *LFP* approach and considered its application in the modules' development a success. People wish to see it extended to other areas and across the nation's public health training facilities.

Considering these promising results, the Capacity Project/Mali recommends the following:

- Integrate lessons learned from the implementation of new modules. During the review of the sessions, teachers made recommendations regarding changes to the modules, such as increasing the time for some objectives, regrouping some training activities, revising some case studies and role playing. These changes should be reviewed and incorporated in the documents.
- Accelerate the new modules' validation process by the INFSS, so that they are integrated in the official training curriculum
- Extend the *LFP* approach to new subjects taught at the EIG and to other public health schools, such as obstetrics and gynecology, anatomy, microbiology and surgery
- Continue supporting EIG partners in the acquisition of materials, the development of other modules, the strengthening of support systems among teachers/preceptors and students
- Implement a formal consultation mechanism between teachers and clinical preceptors in order to share information regarding the students' clinical practicum
- Strengthen the supervision system for students at the internship sites
- Strengthen teachers' and preceptors' skills and knowledge in the areas of FP and EmONC and encourage the use of computer tools (including the Internet and common software such as PowerPoint, Word, Excel) in the teaching methodology, for pedagogy, coaching, operational research and scientific writing.

# Introduction

Mali is characterized by a low gross domestic product of West African CFA (*Communauté financière d'Afrique)* 229.412. Only 48% of the population can access potable water (36% in rural settings), while less than 10% of households have access to improved sanitation facilities. The gross education rate is 64.35% (73% for boys and 64% for girls). Health coverage is also far from adequate, as only 44% of Malians can access a health facility within a radius of ten kilometers (66% within a radius of 15 kilometers). Therefore, there is nothing surprising about the fact that maternal and neonatal mortality and morbidity indicators are a cause for concern. Indeed, according to the 2006 Demographic and Health Survey[1], the maternal mortality rate lies at 464 deaths per 100,000 live births.

Improving the population's health as a whole, especially among women and children (three-fourths of the total population), is of utmost priority. In order to address this challenge, the Malian government committed itself to meet the Millennium Development Goals and to comply with the international agreements that emerged from the International Conference on Population and Development that took place in Cairo in 1994.

The lack of access to high quality services at every level of the health care system is one of the most critical issues Mali faces. Numerous evaluations highlight factors contributing to this poor accessibility, such as inadequate distribution of human resources, inadequacies between pre-service training curricula and field reality, insufficient materials and poor distribution of health facilities.

In order to improve the distribution of health workers across the nation, policy makers have opted for the local training of service providers. These workers are most often native to the region and are committed to serving local populations during a specified timeframe. This initiative can be enhanced through proven and efficient training techniques.

The classic curricula that have been imported and offered by training institutions have not met needs encountered in the field and tend to produce unprepared workers. This explains why a number of instructional specialists have criticized this approach. Instead, they recommend an assessment of the field needs prior to the design of the training modules. This can help produce qualified providers, with expertise in particular areas and who can be deployed immediately.

Such an approach had seldom been tested in Mali. In its concern to efficiently contribute to the improvement of health providers' training, the IntraHealth/Capacity Project staff in Bamako decided to test the *Learning for Performance* (*LFP)* approach at the Gao Nursing School (EIG) through the support of the United States Agency for International Development (USAID)-funded Capacity Project and in collaboration with the Gao national and regional decision-makers, as part of the Project's mandate to improve the skills of health workers. The purpose of this initiative is to repeat this benchmark experience in the other regional training schools,

[1] Ministry of Health's Planning and Statistics Center (CPS/MS). Ministry of Economy, Industry and Trade's National Statistic and Information Directorate (DNSI/MEIC) and Macro International Inc 2007. Mali Demographic and Health Survey 2006. Calverton, Maryland, USA: CPS/DNSI and Macro International Inc.

the National Training Institute in Health Sciences (INFSS) and the Faculty of Medicine, Pharmacy and Odontostomatology.

The decision to develop reproductive health/family planning (RH/FP) and child health training modules resulted from the school's needs assessment conducted by the Capacity Project in August 2006. The purpose of the intervention is to provide technical assistance to the EIG in order to improve and adapt the content of the pre-service training curricula aimed at local health technicians working in the area. This intervention is part of USAID's comprehensive support to the EIG in order to help solve problems related to the lack of skilled human resources for health in Northern Mali.

The intervention was evaluated in order to document the efficiency of the *LFP* approach through the implementation of new modules. This report provides a synthesis of the information collected.

# Methodology

## Goals and objectives

The purpose of this evaluation is to document the implementation of the *LFP* approach in the revision of the EIG's training curriculum.

Its specific objectives are to:

1. Describe the modules' adaptation and implementation process
2. Measure the impact of the new RH/FP modules on the students' skills and knowledge
3. Measure the level of satisfaction among students, teachers, preceptors and managers with the learning intervention (process and results).

Objective two of the evaluation targeted third year midwifery and obstetrical nursing students at the Gao, Ségou and Sikasso nursing schools. The two remaining objectives targeted the Gao nursing school's teachers/supervisors, the administrative managers and the students.

## Evaluation approach

In order to document how the new modules' implementation generated better results among the EIG students in terms of skills and knowledge, the Capacity Project/Mali conducted a case-control evaluation in two other public health training schools, a private school in Ségou (Training Center for Social Workers and Health Technicians [CFTSS]) and a public school in Sikasso (INFSS). This case-control evaluation was based on a comparison between third year midwifery and obstetrical nursing students. The EIG group was experimental and was trained using the new modules, while the groups that were part of the case-control study (Ségou and Sikasso schools) used different modules (the former curriculum). For the purpose of this evaluation, the new modules are the intervention by itself. Skills and knowledge levels were measured before and after the intervention among the experimental group in order to document its impact on the EIG students' results. The post-test results from the experimental group were then compared to the ones used for the case-control study. All the groups

received the exact same test. Significant differences in the two groups' post-test results could, therefore, show whether the intervention was successful.

## Targets

The survey targeted the EIG, CFTSS and the INFSS. In these schools, the survey focused on three specific targets:

- EIG students (case study group)
- Students in Ségou and Sikasso (case-control groups)
- Key informants at the EIG.

### General characteristics of the EIG students

An intensive training session aimed at the third year students, using the new modules (RH/FP and child survival), took place at the EIG from October 13 to 25, 2008. It should be noted that this training was not carried out in the actual conditions in which pre-service students will be learning this information. This is a limitation that is further discussed in the Constraints and limitations section below. Pre- and post-knowledge tests took place during the training to assess the level of skills and knowledge before and after the training in the areas of RH/FP and child survival (0-5 years old). The Capacity Project/Mali administered the test to all third year midwifery and obstetrical nursing students. Sixteen of the 26 students (61.5%) were obstetrical nurses and ten (38.5%) were midwives.

### General characteristics of the students in the case-control study (Ségou and Sikasso)

The study targeted the CFTSS in Ségou. CFTSS is a private training center like EIG. However, CFTSS primarily trains first degree health workers, namely health technicians and obstetrical nurses. The study also targeted the INFSS in Sikasso. It is important to note that this school only provides training to second degree health workers, namely midwives and registered nurses. The Capacity Project/Mali chose these two schools because of their similarity with the EIG, in terms of training curriculum and also because of their availability.

**Table 1: Distribution of Students in the Case-Control Study Group According to Specialties and Schools**

| | **Ségou** | **Sikasso** | **%** |
|---|---|---|---|
| Midwives | - | 12 | 42.9% |
| Obstetrical Nurses | 16 | - | 57.1% |
| **Total** | **16** | **12** | **100** |

All students completing their third year took a skills and knowledge test in order to compare their results with the EIG students' post-test results. In the two sites, 28 students took the test; 16 obstetrical nurses in Ségou (57.1%) and 12 midwives in Sikasso (42.9%).

### EIG key informants' general characteristics

During the evaluation, the Capacity Project/Mali collected qualitative information from all available key informants at the school, including the EIG teachers and preceptors who were involved in the new modules' development and/or implementation process, the director of the EIG and the director of studies. The collected data were purely qualitative and did not need to be sampled.

## Instruments and techniques used in the collection of data

IntraHealth International and the Capacity Project developed a total of nine data collection tools, as summarized in Table 2.

**Table 2: Data Collection Tools**

| Tool | Purpose | Application |
|---|---|---|
| 1. Students' perceptions form | Aimed at collecting feedback from the EIG students after each training session regarding the way the training session was carried out in general, with a special focus on the learning methods, the materials used and the consistency between the objectives and the content of each module. | It was only used with the students that were trained through the *LFP* approach. |
| 2. Faculty perceptions form | Aimed at collecting feedback among EIG teachers regarding how the training session was carried out in general, as well as their perceptions of students and of the work environment. | It was used after each training session and was given to all faculty members who taught the new modules. |
| 3. External follow-up form | Aimed at collecting independent views regarding the way the sessions were carried out, the commitment of all the parties involved and the conditions that had to be met in order to transfer skills and knowledge to the students. | This instrument could only be used by external observers who attended some training sessions, without being involved either as a teacher or as a student. |
| 4. Sessions review form | The teacher in charge of the session, with the support of other teachers/preceptors and the director of studies had to systematically review the session in order to discuss the way it was carried out and to identify what should be modified or improved. | Teachers reported their comments regarding the issues they encountered, needs for clarifications and possible corrections/improvements. |
| 5. Instructional materials checklist | Aimed at collecting an external point of view regarding the applicability and the usability of the training materials developed for the new RH/FP/child survival (0-5 years old) modules. | This instrument was used by an external observer, who did not take part in the new modules' development and implementation process. In order to collect the information, this observer reviewed the trainer's guide and the student's manuals. |
| 6. In-depth interview guide regarding the modules' development process | Aimed at collecting information on the EIG's RH/FP/child survival module's development process by using the *LFP* approach. | The Capacity Project/Mali used this instrument with a sample of EIG teachers, preceptors and managers, as well as other resources, who were directly involved in the modules' development. |
| 7. Preceptors' perceptions | Aimed at collecting information on the teachers' and the supervisors' perceptions regarding the modules' implementation process at the EIG. | The Project/Mali used it with a sample of teachers and preceptors who had been directly involved in the modules' implementation. |

| Tool | Purpose | Application |
|---|---|---|
| 8. School managers' perceptions | Aimed at collecting information on the managers' perceptions regarding the modules' implementation process at the EIG. | The Project/Mali used it with the school's managers who were directly involved in the modules' implementation. |
| 9. Students' overall perceptions | Aimed at collecting the EIG students' perceptions regarding the implementation of the new training modules. | This instrument was used among students who benefitted from the training using the new modules. |

## Data collection and analysis

The Capacity Project team collected the data during the training or right after the sessions according to a well-identified timeframe. Students, teachers and the director of studies completed Tools 1, 2 and 4 immediately following the end of each session. The external observer completed Tool 5 during the training. Teachers and preceptors completed Tool 6 during the EIG teachers/preceptors' orientation workshops, and students filled out Tools 7, 8 and 9 immediately after their training.

In order to measure the students' level of knowledge, the research team used the questionnaire that was developed with the new modules both for the pre-test and the post-test of the EIG's students. This tool was used among the students in Ségou and Sikasso in June 2008 and with the EIG students during their training in October 2008. However, it is important to note that the EIG students were the only ones to take a post-test after their training using the exact same tool.

The research team analyzed the data by focusing on several components, including: the perceptions of the different parties involved (students, teachers, preceptors and school's managers); the review of the training methodology and the instructional materials; the intervention's impact based on the analysis of the EIG knowledge test results compared with the ones from the Sikasso and Ségou regions. Once collected, the Capacity Project/Mali team analyzed the data, based on two distinct yet complementary methodologies. For the quantitative data, the team collected the data using the Epi Info software and then analyzed the data using the Statistical Package for Social Sciences to generate frequencies and percentages, calculate knowledge scores and create statistics. For the qualitative data, the team analyzed the interview data manually.

At first, the quantitative data analysis consisted of generating frequencies and percentages for all variables. In order to identify the level of knowledge, the team added the points and quoted values included in the knowledge test questionnaire for each student. The research team calculated the percentage of correct answers compared with the total number of points in order to obtain a global score for all the indicators included in the test. After adding the global scores, the team divided the total by the number of students in order to obtain an average knowledge score for the entire group of students. This score was then compared to an acceptable level of knowledge (ALK) set at 70%. Analyzing the average score and the median helped us identify the typical level of knowledge for the students that were part of the sample group. Moreover, the detailed analysis of correct answers (frequencies and percentages) helped us identify the students' specific strengths and weaknesses within the sample group.

The Capacity Project/Mali compared the EIG students' levels of knowledge with the ones collected at the Ségou and Sikasso schools. A significance test (t-test) helped established whether there were real differences between the two groups.

The research team also analyzed the qualitative data. This analysis consisted of reviewing notes taken during the interviews and categorizing them in order to highlight tendencies and similarities, both in terms of content and precision of the submitted answers. In order to minimize subjectivity issues during the interpretation of data, several team members in charge of the survey and the Project/Mali's focal point were involved in this analysis, which helped to discuss and compare the results.

## Protection of human subjects

Before the study started, the Capacity Project/Mali obtained the informed consent of the schools' managers who were selected for the survey (EIG, CFTSS and INFSS). The Project/Mali also obtained the informed consents of all the participants (students, teachers, preceptors, schools' managers) before they were interviewed.

In order to ensure the confidentiality of answers and results, no personal data were included in the questionnaires. Moreover, the Project/Mali presented the data included in the report in aggregated forms according to schools or training specialties. The Project/Mali presented the skills and knowledge test scores in the same way and the individual results from these tests were, under no circumstances, shared with individuals who did not belong to the team in charge of the study.

## Constraints and limitations

Evaluation limitations included the following:

1. The third year students targeted by the evaluation were trained in RH/FP and child health during an intensive two-week training session that differed from the conditions in which EIG students will be learning this information in the future. Going forward, the students' training will be divided according to the planned distribution of the various chapters during the second and third years of the training as discussed with the school's teachers. Introduction of the new modules in the second year program was planned for the 2008/2009 academic year. This meant that the training could not be evaluated before the end of the Capacity Project (September 2009). Since one objective of the evaluation was to measure the impact of the new RH/FP modules on the students' skills and knowledge, the decision was made to train students starting their third year using intensive sessions. The first series of sessions, held from October 13 to 25, 2008, gathered ten midwives and 16 obstetrical nurses and was divided into two simultaneous sessions. The evaluation targeted this group. Assimilation of new knowledge is different when information is provided all at once rather than provided progressively. The training approach used here constitutes a limitation because this may have affected the pre- and post-test results of the EIG students who took part in the study.
2. Due to time constraints, all aspects of the new modules were not fully covered during the intensive training session—this may have also affected the pre- and post-test results.

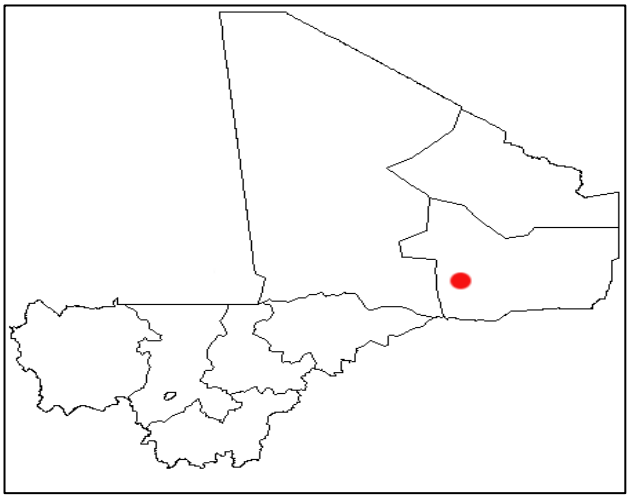
3. The very small size of the sample group was another constraint—this issue was addressed by choosing the student's t-test in order to create the statistics.

# Results

## Description of the intervention

### Background and justification for the intervention

The purpose of the EIG is to develop sustainable human resources for health in the three northern regions of Mali (Tombouctou, Gao and Kidal). A private institute, the EIG was founded after it was publicly acknowledged that deployed health auxiliaries could not adequately meet the population's health needs in the northern regions and that, on the other hand, the Ministry of Health could not meet the needs of these three regions in skilled human resources.

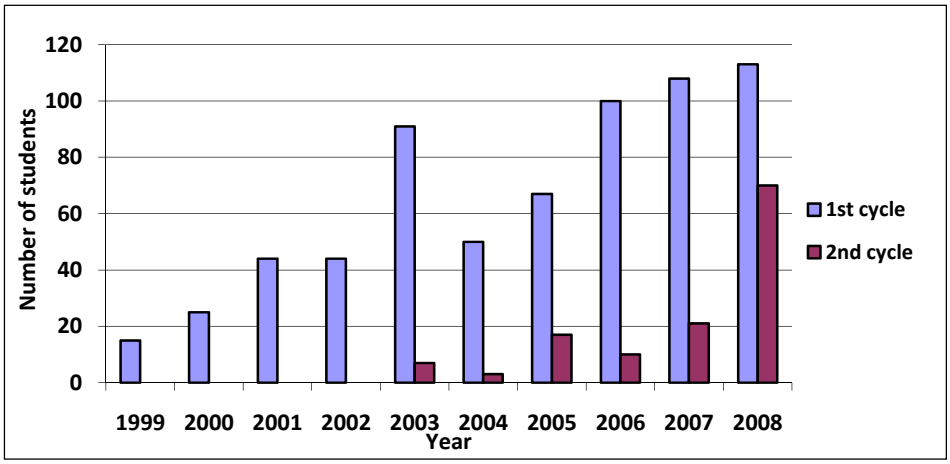


**Partnership and leadership**: Since 2006, USAID has been the school's main donor and has contributed to the building of a polyclinic (New Peak Foundation), facilitated the procurement of office and computer hardware (Capacity Project) and has helped students with limited resources to receive scholarships.

**Operation and organization**: The EIG currently offers two training cycles. The first cycle focuses on training public health technicians, laboratory technicians and obstetrical nurses. The focus of the second one is on training of registered nurses and midwives. Because demand is so high, students are recruited through an entrance examination. For students benefitting from a scholarship, a quota is set in each region depending on the staffing needs and the population to be covered. Sixty students on scholarship are currently registered at the school, the majority of whom comes from the three northern regions. Scholarships are usually granted by donors (USAID, New Peak Foundation, Médecins du Monde, Kidal and Smara), nongovernmental organizations and local authorities. In compliance with the contract they sign, scholarship recipients must be committed to serving the local authorities of their native regions for periods ranging from one to five years.

The following graph shows that the number of students enrolled in the first cycle each year has increased since the EIG first opened, growing from 15 students in 1999 to 113 in 2008. Enrollments have also significantly increased in the second cycle.

**Graph 1: Number of Enrollments at the EIG by Year and Cycle**




The need to create a new training curriculum in RH/FP and pediatrics at the EIG was raised after a survey conducted by consultants from the Capacity Project and IntraHealth International in August 2006. The purpose of this visit was to provide technical support to the school in the improvement and adaptation of the pre-service training curriculum content aimed at local health technicians. After the visit, the consultants made the following observations:

- There were no standard curricula for the main subjects taught to health technicians
- The teachers did not receive adequate instructional training on a regular basis
- Theoretical teaching techniques were not always adequate; therefore, teachers could not foster a proper acquisition of skills and knowledge
- There was no correlation between the clinical practice schedule and the theoretical classes
- The emphasis was on theoretical training instead of practical training (i.e., demonstration on anatomical models and clinical practica in health facilities)
- Materials and demonstration sessions were lacking
- The students' level of knowledge was generally low when they entered the EIG
- It was difficult to retain the teachers
- The population had an increasing need for high quality health care providers.

## Design framework for the intervention: *Learning for Performance*

The *LFP* approach is an instructional design process to address performance-related issues or to address a gap when health workers lack essential skills and knowledge to perform a task. The *LFP* process revolves around two key components: performance improvement and instructional design. The goal of *LFP's* learning interventions is to improve performance, analyze performance gaps, identify factors contributing to these problems and implement systems that enhance and strengthen the performance delivered by the providers.

The *LFP* approach uses the five components of instructional design (analysis, design, development, implementation and evaluation) and improves the relevance and the efficiency of learning methods and curricula by linking them to the job tasks, the training participants and the specific professional contexts. This facilitates the transfer of learning and fosters enhanced work performance.

This approach can be used in the development of learning interventions[2] at any level. It contributes to:

- Linking training to specific job responsibilities/skills, thus facilitating the adaptation process when tasks are modified or distributed differently
- Eliminating unnecessary content from the training, thus making the curriculum more efficient
- Highlighting the most appropriate ways (learning approaches, methods, evaluations, etc.) to develop health workers
- Incorporating skills practice and application of skills and knowledge that are directly linked to the workers' job situation
- Addressing the performance factors that determine whether new skills and knowledge can be applied on the job (transfer of learning).

The *LFP* structured framework can be used to develop skills and professional behaviors that are not always included in traditional teaching methods for health providers. This set of skills may include: management skills for nurses; supportive supervision; in-service education; gender sensitivity; respectful and empathic treatment of patients or clients in order to fight discrimination and stigma among people living with AIDS.

The *LFP* approach is implemented by:

- Specifying the purpose of the training aimed at addressing the gap in skills and knowledge
- Learning about participants and their work environment
- Identifying existing resources and training conditions
- Identifying the job responsibilities (or skills) and the main tasks related to the gap in skills and knowledge
- Specifying the key skills and knowledge
- Listing the learning objectives
- Deciding how these objectives should be evaluated

[2] The notion of *learning intervention* is used throughout the document to describe any type of educational or training program. It can either refer to *workshops* or *training programs* (pre-service education, in-service education, in-service training workshops or programs), as well as all the learning approaches (classroom education, e-learning, on-the-job training, self-training, clinical practical exercises, mix of learning approaches).

- Choosing activities, materials and learning approaches, and developing the instructional strategy
- Developing, pre-testing and reviewing the lessons, activities, training materials and learning evaluation tools
- Preparing for the implementation of the approach
- Implementing and monitoring the learning and logistic processes
- Assessing the efficiency of the learning intervention and modifying it accordingly.

**New modules' adaptation and implementation process**
The development and implementation of the EIG's new modules (RH/FP and child survival) are based on the aforementioned *LFP* approach and include the following activities:

***Identification of needs and inadequacies***
This phase was crucial in starting the process. A team of national and international experts from the Capacity Project conducted this phase after several visits to the field. These visits allowed for discussions among all the parties involved (decision-makers, trainers, providers and beneficiaries) in order to collect information related to the following topics:

- Needs expressed by (new and former) students from the school
- Identification of the health technicians' specific tasks by teachers and centers' field managers
- Inadequacies observed during the field visits and during daily practice by the health technicians that were trained at the EIG
- Learning goals related to the gaps in skills and knowledge
- Learning about the participants and their work environment
- Identification of existing resources and training conditions
- Determining the professional responsibilities (or competencies) and the main job tasks related to the gaps in skills and knowledge.

***Orientation of the stakeholders involved in the LFP approach***
The team conducted this phase on two separate occasions in August 2006; through a general presentation and a training workshop.

The general presentation of the *LFP* approach was open to all the teachers at the EIG (full-time or part-time), clinical supervisors, regional decision-makers and former EIG students. A total of 23 people participated in this presentation. The purpose was to help the participants understand 1) the rationale behind the competence- and performance-based approach used in teaching and learning, and 2) the curriculum development process based on competences and performance.

The team organized a five-day workshop with the Capacity Project's support in order to create a model of the competence- and performance-based approach to be used in the development

of a curriculum. Twelve people participated in this activity, including permanent teachers and preceptors from the EIG, clinical staff, Ministry of Health decision-makers and former EIG students working at the regional referral hospital.

***Modules' design and development***

After identifying the various needs and tasks and then proceeding to the teacher orientation in the *LFP* approach, the team comprised of Capacity Project and Ministry of Health staff launched the design and development process for the new modules. The process started with a bibliographical review of the literature related to RH and child survival. Using the Policies, Standards and Procedures developed by the Malian Ministry of Health in 2005 as reference documents, the team selected the optimal content for each theme and then developed it. The content had to be compatible with the ALK for health technicians in pre-service training and yet adapted to realities encountered in the field. For each learning objective, the learning material, the teaching method and the evaluation criteria were identified.

In July 2007, a group of teachers and preceptors from the EIG attended a workshop in order to review and amend the modules' first draft. This phase also allowed for a new discussion on the method used in their design process. The discussions mostly focused on the different stages of the *LFP* process and their purpose: the identification of needs, the development of the learning objectives and training methodology, assembling of teaching materials, appropriate teaching methods and follow-up/evaluation of students. Feedback from the EIG teachers helped the team develop a revised version of the modules.

Finally, the team tested all of the training and evaluation tools during micro-teaching sessions that took place during the EIG teachers/preceptors' orientation workshop in the new modules, which was organized in May 2008 (see below).

Throughout these various stages, a total of 18 teachers/preceptors were oriented in the *LFP* approach and participated in the new modules' (RH/FP and child survival 0-5) revision process.

**Table 3: Number of Teachers/Preceptors Who Participated in the Modules' Development Process Using the *Learning for Performance* Approach, by Cadres**

| Cadre | Number | % |
|---|---|---|
| Doctors | 10 | 56 |
| Midwives | 6 | 34 |
| Obstetrical nurses | 2 | 10 |
| **Total** | **18** | **100** |

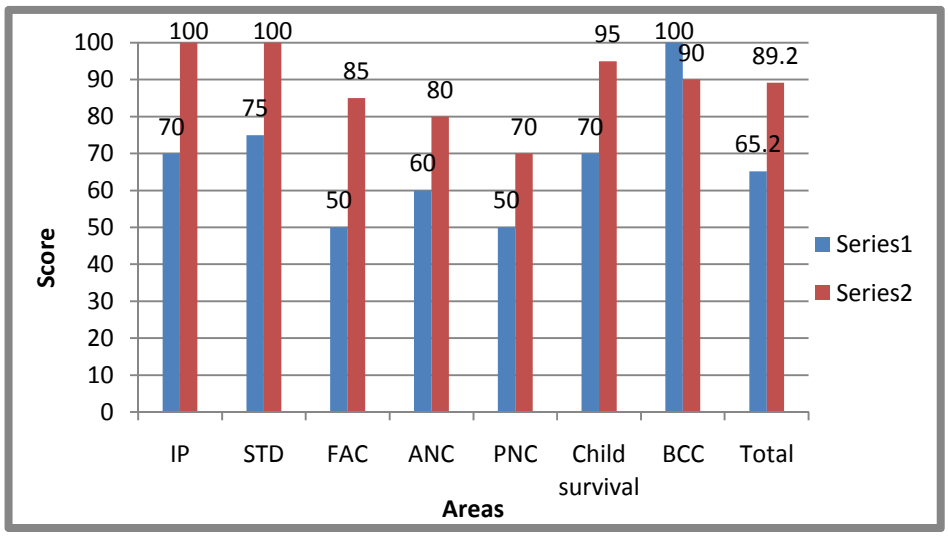
***EIG trainers' preparation in the utilization of the new modules***

During the modules' implementation process, the implementation team conducted several field missions in order to train the school's teachers/preceptors and managers in their utilization while collecting feedback on these modules. This implementation process revolved around two key stages.

The first stage (May 2008) consisted of an orientation workshop, with 12 teachers and preceptors from the school, in the reviewed and corrected modules based on the observations

made by the first mission and by the other consultants or resources. It also helped strengthen their skills and knowledge in the areas of RH/FP and child survival (0-5 years old). The RH/FP teachers/preceptors took the knowledge test before and after the workshop; results showed that their average knowledge score went from 65.2% to 89.2% after the training. This workshop also helped strengthen their knowledge of the *LFP* methodology.

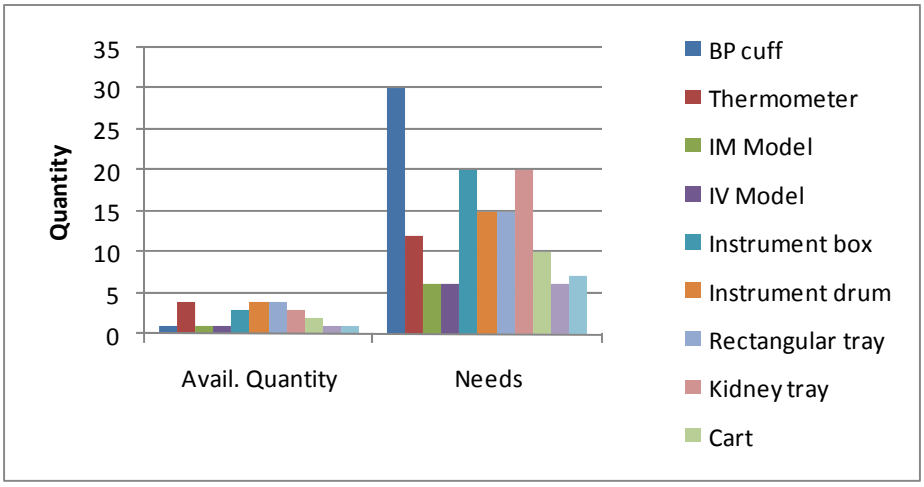
**Graph 2: Teachers/Preceptors' Knowledge Scores in the Areas of Reproductive Health/Family Planning and Child Survival (0-5) Before and After the Orientation (n=12)**




The team discussed a temporary schedule for the distribution of the modules throughout the entire training cycle, as well as the identification of material and instructional needs in relation to the training in the new modules. For the most part, this consisted of basic medical supplies and anatomical models used for practical demonstrations.

In addition to the equipment and materials already available at the EIG, the Capacity Project provided an anatomical model to be used for child delivery practical demonstrations, ten posters on active management of the third stage of labor and birth preparedness plans, videos about infection prevention (IP), female genital cutting, FP counseling, sexually transmitted infections (STIs), breast-feeding, lactational amenorrhea method, active management of the third stage of labor and postabortion care. Also, the Project supported the EIG in the purchase of necessary consumables used during classroom demonstrations, such as contraceptives.

**Graph 3: Instructional Materials Availability and Needs**




The second phase took place right before the third year students' training, finalizing the preparation process. It consisted of assigning the teachers among the sessions and preparing the courses based on the training materials developed for the new modules (RH/FP and child survival 0-5).

***Implementation of the learning process: EIG students' training***

The third year students were trained in RH/FP and child health during an intensive two-week training session that differed from the conditions in which EIG students will be learning this information in the future. The first series of sessions, held from October 13 to 25, 2008, gathered ten midwives and 16 obstetrical nurses and was divided into two simultaneous sessions. These sessions were conducted by the trained teachers using the new RH/FP and child survival modules.

***Monitoring the learning process***

In compliance with the monitoring and evaluation plan, the team monitored all activities on a regular basis as follows:

- The teachers systematically held review sessions in order to identify the positive aspects of the process and what needed to be improved. The periodicity of these sessions linked to the scheduling of the training sessions.
- During the Capacity Project training team's visit to the EIG, they conducted an external monitoring process in order to support the teachers, tutors, clinical preceptors and other staff members while they were using the new materials, contents and methods. During their visit, the Project's training team assessed whether:
    - Learning materials (trainer's guide and reference manual) and content were useful and applicable
    - Methods and learning approach were adequate and acceptable
    - Training sites were well-prepared and adequately equipped

- Instructors and trainers were adequately prepared and supported
- Students were adequately supported.

## Perceptions regarding the modules' adaptation and implementation process

The Project's team interviewed a sample group of EIG students, teachers, preceptors and managers along with other resources who were directly involved in the design and the implementation of the modules. The purpose was to collect information on the training modules' development and implementation process at the EIG using the *LFP* approach.

### Perceptions regarding the modules' development process

The modules' design and development process unfolded in several stages involving all stakeholders. The EIG teachers, preceptors and managers played a key role in this work. In addition to identifying the tasks, they took part in the entire design and revision process of the reference manuals and trainers' guides. Former EIG students and the community health associations mostly participated in the identification of tasks and needs.

From the interviews, the Capacity Project/Mali noticed that there was a critical need for the new modules' development. Based on interviewees' responses, it appeared that the selection of the two areas covered by the new modules—RH/FP and child survival (0-5 years old)—was necessary, as they observed that maternal and child mortality in the Northern region was a cause for serious concern. Moreover, the development of these modules was important in order to standardize teaching methods and content of the courses within the EIG and to provide high quality training to future health providers.

The interviews also revealed that the idea of the modules' development was widely accepted among the various parties involved. According to the interviewees, the team in charge of the modules' development process consisted of the right people, as they shared a common vision. Also, the teachers were open to the development of new modules, as this process generated an opportunity to reduce the gap between theoretical training and the realities encountered in the field. The teachers did not have any problem giving up the previous teaching method, as they understood how beneficial this new practical approach would be.

Finally, all interviewees acknowledged that every step undertaken in the modules' development process was necessary.

### Perceptions regarding the modules' development conditions

According to the interviewees, the school's managers' level of commitment in the modules' development process was sufficient. However, the interviewees deemed insufficient the resources made to carry out their mission, especially in terms of the participants' management.

Interviewees perceived that the expectations related to the team members' roles in the modules' development were, in general, clearly specified. The team reached a clear consensus on the content and the methodology during the entire revision process.

When comparing the LFP approach with previous experiences dealing with training modules' development, the interviewees appreciated the fact that they were involved in the development process. Their involvement was beneficial and was a source of motivation for them. Therefore, they told us, they would be ready to participate in a similar experience in the future.

The respondents were satisfied with the technical assistance and resources they received during the modules' development process.

Overall, the process has been a source of great satisfaction, due to the following:

- Involvement and availability of the various parties
- Mobilization of financial and material resources by the EIG management team and its partners, including IntraHealth International and the Capacity Project
- Active participation in the various orientation and training workshops
- Experience sharing among the various actors
- Consensus reached in the adoption of documents.

Interviewees mentioned the following needs to be addressed in order to ensure the sustainability of the performance-based approach:

- Purchase of demonstration materials related to the learning objectives included in the modules
- Mastery of computer tools by the school's teachers and clinical preceptors.

### Conducting the training using the new modules

At the end of each session, teachers had the opportunity to express their views regarding the way a given session was conducted through the use of "Tool 2: Faculty perceptions form." The purpose of this instrument was to collect EIG teachers' feedback regarding the training session as a whole, as well as their perceptions of the students and the work environment.
The students' perception on the new modules' implementation process was also collected at the end of each session. The questions asked related to the learning methodology, the materials and equipments that had been used, the trainers and the work environment.

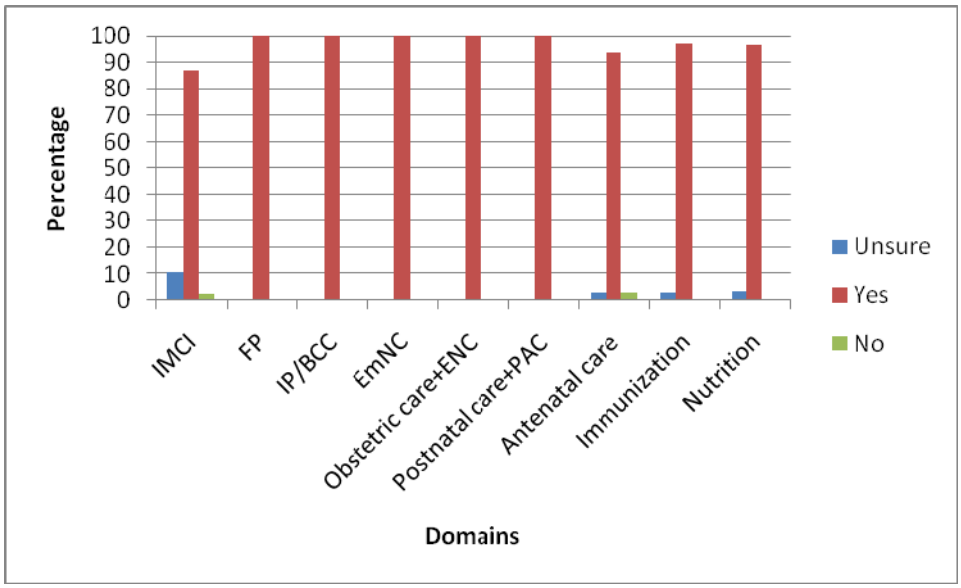
The Project's analysis of results led to the following conclusions about facilitation of the sessions; learning methods and activities; and training materials.

#### *Facilitation of the sessions*

When asked about the proportion of students showing an interest in the content of the teaching offered to them, most trainers said that over 80% of students were very interested in the modules, especially in the areas of infection prevention/behavioral chance communication (IP/BCC), focused ANC and emergency newborn care (EmNC). On the contrary, sessions dealing with FP and ANC were not as popular among students.

The majority of students said that the assigned learning objectives matched their expectations no matter what session they attended. Only one student disagreed in the area of ANC and integrated management of childhood illnesses (IMCI).

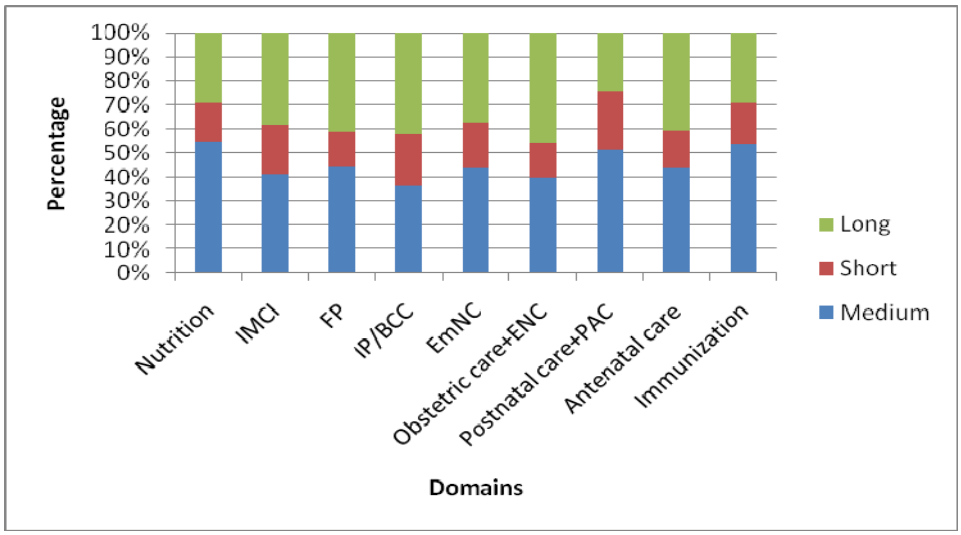
**Graph 4: Percentage of Students Considering That the Learning Objectives Matched Their Expectations (n=26)**




The majority of teachers declared that the students' level of participation in the classes was satisfactory. However, the level of participation in the sessions dealing with ANC/ENC was lower because of the insufficient number of practical demonstrations and the high number of objectives to meet.

According to teachers, the time allotted for classes was considered sufficient in order for students to fully understand the content. ANC was the only exception. Although the students considered the time allotted acceptable, the sessions dealing with ANC, ENC and IP/BCC were considered too long. This could be due to the high number of objectives to be met.

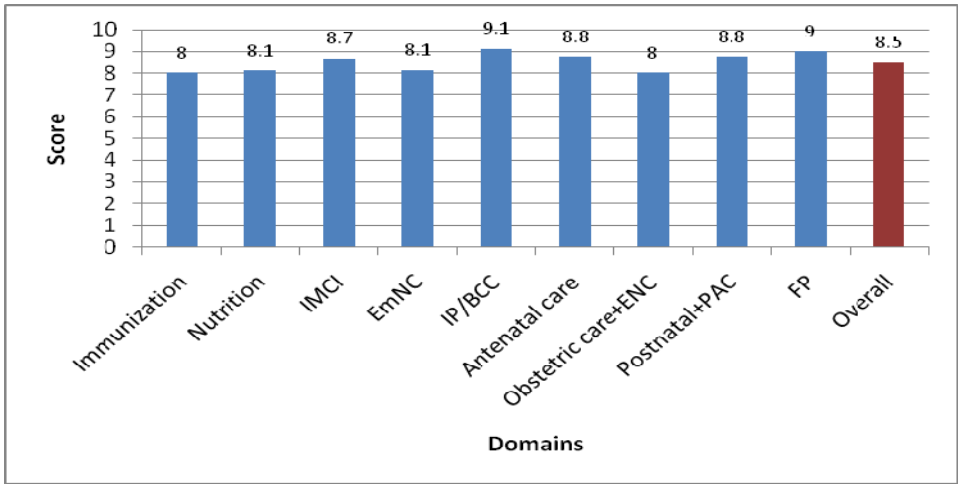
**Graph 5: Percentage of Students Who Ranked Each Session as Too Long, Too Short or Satisfactory in Duration (n=26)**




Overall, the teachers felt they had all the necessary material in order to teach the courses and said they did not encounter any particular problems while teaching the modules. Nevertheless, some teachers mentioned difficulties related to the availability of demonstration materials for a few sessions, including IMCI, EmNC and ANC/ENC.

According to interviewed teachers, interactivity during the training was excellent. On a scale from one to ten, they would give an average grade of 8.5, oscillating between eight and ten.

**Graph 6: Level of Interactivity During the Training by Subject Areas**



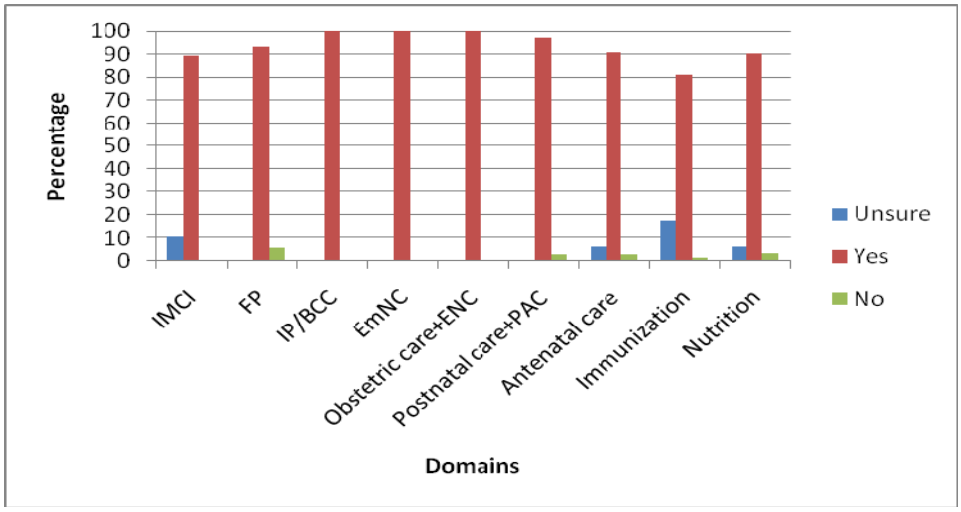

According to the vast majority of students, the instructors who taught the modules lived up to their expectations.

The reasons include:

- Trainers' availability to answer their questions and the clear explanations they provided
- Use of pictures and video illustrations
- Discussions among students and between the students and the trainers.

Two out of the 26 students thought otherwise regarding FP and only one regarding immunizations, as well as antenatal and postnatal care.

**Graph 7: Percentages of Students Who Considered the Teachers Lived Up to Their Expectation, by Subject Areas (n=26)**




***Learning methods and activities used***

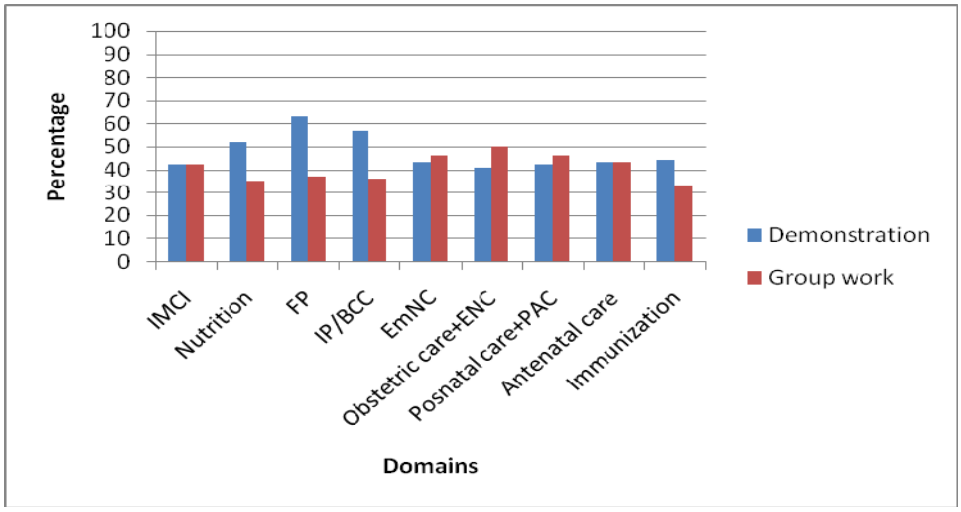
The success of a training session is, for the most part, related to the learning methods used. One aspect of the *LFP* approach is the diversity of the instructional methods used depending on the assigned objectives. As part of the new modules' implementation process, the team used case studies, illustrated presentations, brainstorming, group work, practical video or model demonstrations, role plays, practical internships and field visits.

The trainers did not mention any major difficulties regarding the teaching methods, apart from the demonstration on pelvic measurement and on some contraceptive methods. They unanimously told us that the group work was the most participative method. This method was, according to them, the one that took the most time. Some teachers also mentioned case studies and practical demonstrations as taking a long time. Brainstorming was considered the least time-consuming.

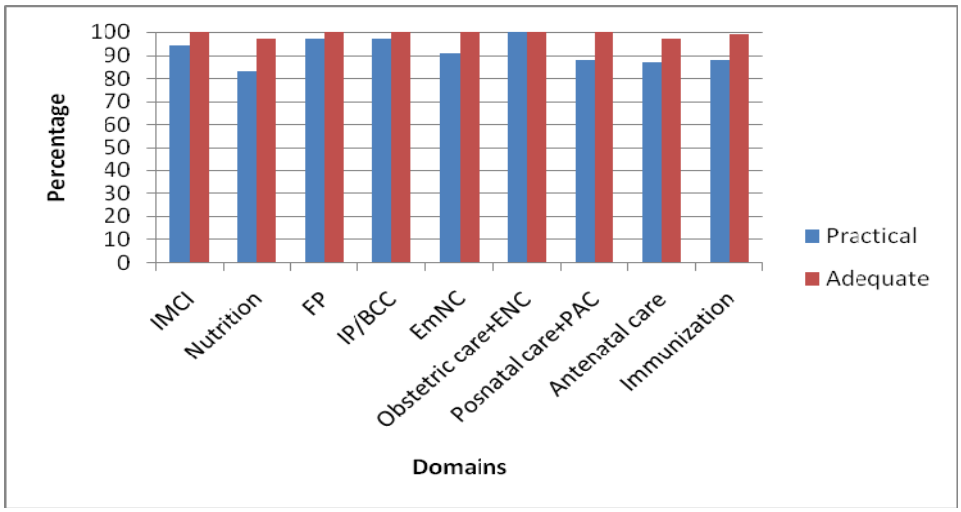
The majority of students declared that the teaching methods facilitated their own learning process. Only one student thought otherwise regarding FP, IP/BCC and immunizations, respectively. The first source of satisfaction for students was the fact that, for the first time, the teachers used a variety of methods. It is important to recall that in the previous curricula, lectures were the most common teaching method.

According to the students the Capacity Project/Mali interviewed, the methods are now diversified, practical and well-adapted to their work environment. Among all the methods, they particularly appreciated the practical demonstration sessions (video or simulation) and the group work, even though these methods required a lot of time.

**Graph 8: Percentage of Students Who Appreciated Demonstrations and Group Work, by Subject Areas (n=26)**




**Graph 9: Percentage of Students Who Considered the Learning Methods to be Practical or Adequate, by Subject Areas (n=26)**




### *Training materials used*

In order for instructors to carry out a successful training session, the instructional material must be adequate, in sufficient quantity and consistent with the learning objectives. Generally, the teachers agreed that the materials were available even if some problems arose, including:

- Poor quality of images used for the demonstration on immunizations, which was due to the low quality of the multimedia equipment

- Incomplete IMCI reference manuals
- Lack of neonatal resuscitation materials during the demonstration on EmNC
- Failure of the computer system in one of the training rooms during the IP/BCC session
- Absence of pelvic models
- Lack of audiovisual support materials on childbirth and essential newborn care
- Lack of demonstration material on FP (contraceptive methods and flip charts).

Trainers agreed that the available training material matched the learning objectives and that the reference manuals were updated according to the policies, standards and protocols.

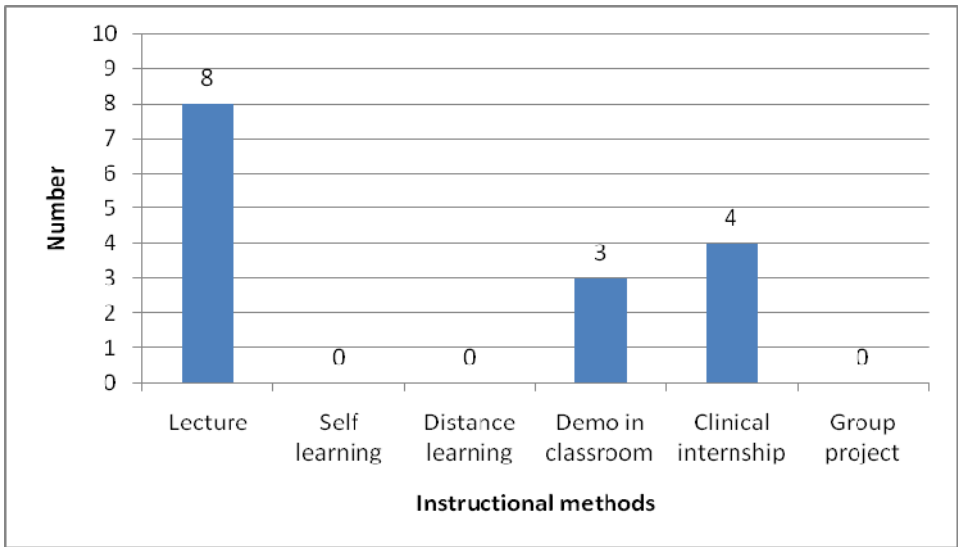
### General perception on how the training was conducted

The team interviewed ten teachers in charge of the training using the new modules, in order to collect demographic information and gain insight on how they conducted the sessions.

#### *Teachers' skills and experience and level of preparation*

It is important to note that eight out of the ten interviewed teachers had between two and five years of experience, and half of the teachers had worked at the EIG for two to five years. All the teachers said they acquired their instructional skills through the school. Although they received training in the use of various instructional methods, eight out of ten instructors admitted that they most frequently used lectures. Only three teachers mentioned demonstrations using anatomical models while four instructors said they were using clinical practica.

**Graph 10: Instructional Methods That the Teachers Reported Using the Most Often (n=10)**



All the interviewed teachers said they received specific training in RH/FP but they told us about the need for refresher training, especially in the areas of EmONC and FP.

As the results of the interview showed, despite their seniority and the instructional training they received in RH/FP, the interviewed instructors' capacity to offer a type of teaching that is focused on the development of skills needed to be strengthened. Also, in order to be able to teach the new modules, the teachers received some orientation to have a better understanding of the contents and so they could practice the learning methods to be used.

The teachers had access to various instructional materials and equipment such as laptops, video projectors, anatomical models (genital organs, pelvis or other models used for demonstrations on childbirth), video tapes and reference documents (Policies, Norms and Procedures in RH/FP, obstetrical guidelines, new nursing guide). The teachers said that the equipment and materials were available at the library or the warden's office and that they were easy to access despite their insufficient quantity. Teachers expressed a need for additional materials including computer hardware, demonstration materials especially in the area of child survival, sample contraceptives, flip charts regarding RH and finally videos on eutocic and dystocic childbirth management.

***Sites and equipment***

All the teachers agreed that with a maximum of 50 students per class, the classrooms at the EIG are adapted to the high number of students and allow for a quality and efficient training. Indeed, they are considered spacious, well ventilated and clean. They are also well equipped.

According to the teachers, the materials necessary for the implementation of classroom demonstrations and practice on anatomical models in the areas of RH/FP are more or less available. They have anatomical models and mannequins as well as samples of contraceptive products used for FP. This material can easily be accessed by teachers and students after they seek the approval of the warden or the director of studies.

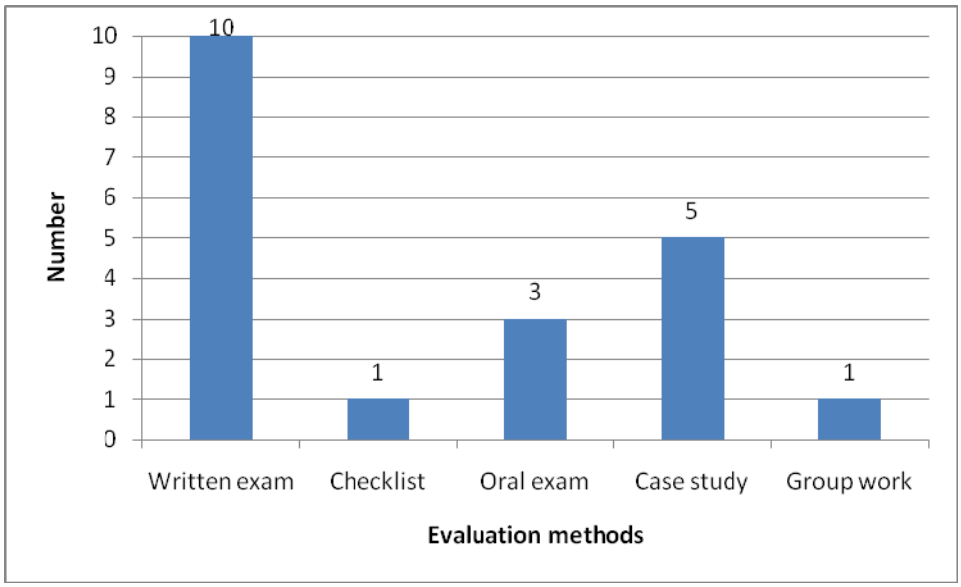
The EIG reserved rooms specifically for demonstrations and mannequin-based practice. They are well equipped, which allows all students to put their knowledge into practice and they can easily be accessed after seeking approval from the warden, the tutors or the director of studies. It is important to note that there was an insufficient quantity of materials.

Audiovisual equipment, such as video/overhead-projectors and computers, was available. Reference documents related to RH/FP such as Policies, Norms and Procedures were also available.

***Student support system***

The teachers mentioned that the skills evaluation methods they used the most often before proceeding to clinical practice generally included written exams and, less frequently, clinical case studies.

**Graph 11: Evaluation Methods That the Teachers Reported Using the Most Often (n=10)**




According to the teachers, there was a very high level of collaboration between them and the clinical preceptors. This very close collaboration was based on mutual respect and allowed for discussions on a regular basis. Nevertheless, most teachers thought there was no formal mechanism to share information regarding the students' learning objectives and their performance with the clinical preceptors. The learning objectives now included an evaluation form, which had to be filled out by the preceptor at the end of the practicum. However, this mechanism was inefficient, as it did not enable teachers to share information among them.

There was a mechanism aimed at monitoring students over the course of their clinical practicum. It consisted of practicum reports that the students prepared and which were reviewed by the people in charge of the practicum, tutors' field visits, the filling-out of attendance forms for ward-duty and supervision sessions conducted by practicum sites' managers.

EIG tutors conducted supervision visits at the practicum sites, but these were too irregular to be effective.

The students' performance is assessed during the practicum through question and answer observations, using a checklist designed by the EIG beforehand and interviews with the preceptors.

The available instruments used to assess if the practicum's goals had been met included the checklist and the student's notebook.

***Difficulties reported by the teachers***

Apart from the insufficient quantity of some instructional materials, the main difficulties reported by the teachers during the implementation of the new modules included the absence of a formal mechanism for teachers and clinical preceptors to share information regarding the

students' learning objectives during the practicum, and the lack of supervisory visits for the students at the practicum sites. Moreover, teachers expressed the need for further support of training needs in the areas of EmONC and FP.

The daily review of sessions aimed at assessing the sources of satisfaction and areas that needed to be improved. It focused on the teachers and the documents used. The main difficulties were mostly encountered at the beginning of the training. They included a lack of confidence by some trainers, the lack of complementary nature of the two-person teams, problems with time management and the implementation of the instructional materials. The reviewing process also helped us note inadequacies in the reference manuals and the guides.

## Impact of the new modules (reproductive health/family planning) on the students' results

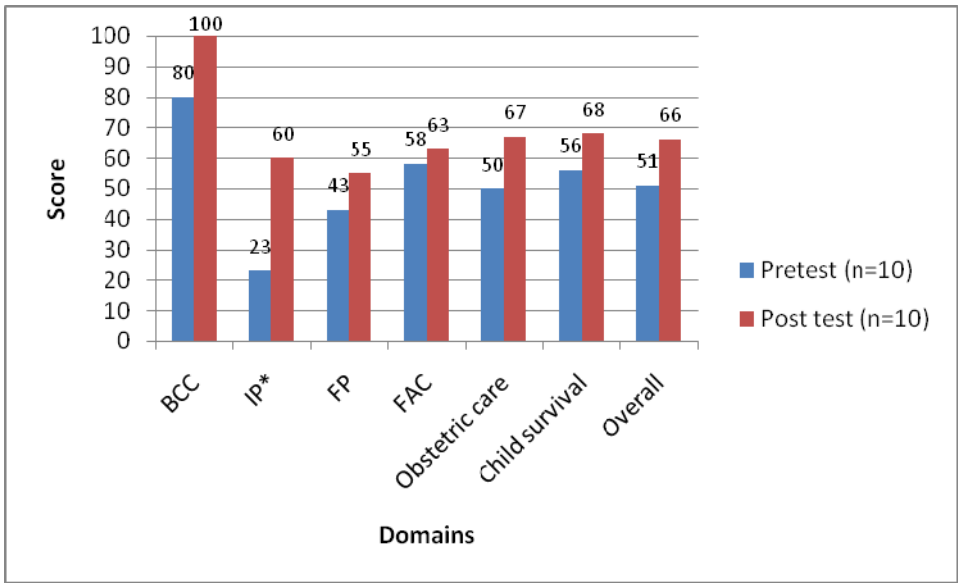
In order to measure the effectiveness of the new modules' implementation on the students' results, the Capacity Project/Mali compared the level of skills and knowledge of the trainees after the intervention to their level before the training took place. The Project/Mali also compared their level of skills and knowledge after the intervention to the level of students in other public health schools, which had approximately the same characteristics (third year midwifery and obstetrical nursing students, located in the same region). The team selected schools for the case-control study according to their sector (private or public) and their geographical accessibility (distance from Bamako). In order to calculate the scores, the Project/Mali added the students' grades to calculate a group average score. In order to make the comparison easier between the two groups, the Project/Mali compared the percentage of correct answers with the highest percentage possible in order to obtain an overall score for every indicator in the test. The Project/Mali conducted the students' t-test to check if the difference between the pre- and post-test results and the difference between the groups showed statistical significance.

### Analysis of the knowledge scores at the EIG

The analysis of the knowledge/skills results showed that the EIG midwifery students obtained an average global score of 51% at the pre-test and 66% at the post-test, thus yielding a statistically-significant 1.29 increase rate, ($t=1.73$, $df=18$, $p<0.05$). While this improvement is important, EIG midwifery students did not reached the ALK set at 70%. It should be noted, however, that such results are reasonable given constraints of implementation described above such as training of students during intensive training sessions and the fact that all contents were not fully covered.

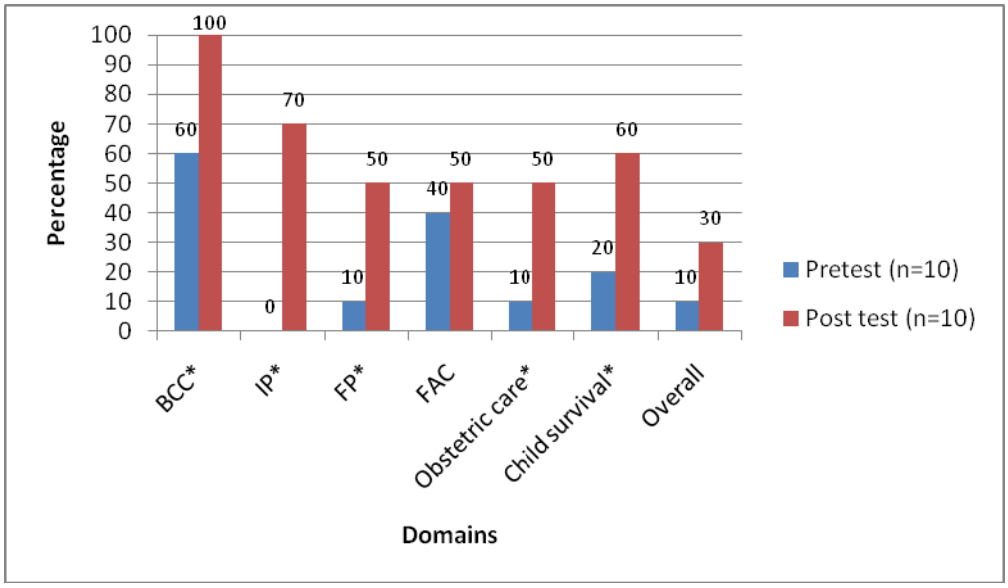
At the pre-test, the best score (80%) was obtained in the area of BCC, while the lowest score was reported in IP (23%). During the post-test, all the midwives obtained a score of 100% in the area of BCC and a score of 55% and above in all other areas. The most noticeable improvement was reported in IP, with a score soaring to 60% compared with 23% during the pre-test. This difference is statistically significant ($t=2.65$, $df=18$, $p<0.05$).

**Graph 12: Average Knowledge Score at Pre/Post-Tests among EIG Midwifery Students, by Subject Areas**




Only 10% of midwives reached an ALK of 70% and above for every area at the pre-test. This percentage changed to 30% at the post-test, thus yielding an increase of 300%. This improvement is even more significant in the area of BCC, in which all midwives were above the ALK. Also, in the prevention of infections, the score went from 0 to 70%. In the other areas, a four-fold increase was noted and at least half of the midwives reached or surpassed the ALK, set at 70%. Except in the area of focused ANC, this difference was statistically significant ($t=1.73$, $df=18$, $p<0.05$).

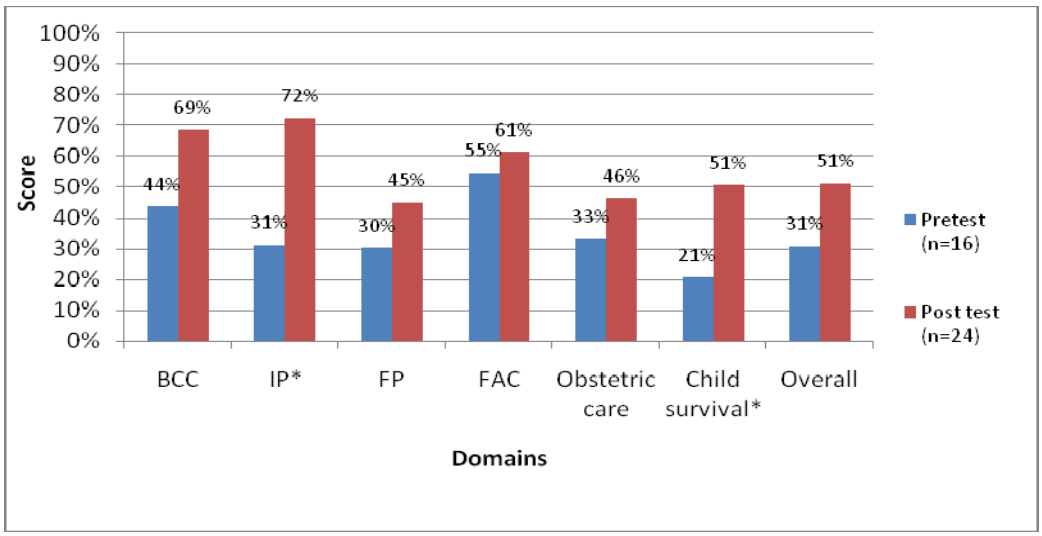
**Graph 13: Percentage of Midwives at the EIG Who Reached or Surpassed the Acceptable Level of Knowledge Set at 70% for the Pre/Post Tests, by Subject Areas**



The analysis of results showed that EIG obstetrical nurses reached an average overall knowledge score of 31% at the pre-test and 51% at the post-test, thus yielding an improvement rate of 64.5% (t=1.32, df=38, p=0.05). While this improvement is impressive, EIG obstetrical nurses did not reach the ALK set at 70%. Again, such results are reasonable given the constraints of implementation described earlier. It is also important to note that midwives obtained better overall scores than obstetrical nurses, at both pre-tests and post-tests.

At the pre-test, the best score (55%) was obtained in focused ANC, while the lowest was reported in child survival (21%). At the post-test, obstetrical nurses obtained their best scores in IP (71%) and a score of 44% and above in the other areas. The most significant improvements were reported in IP (31% for the pre-test compared with 71% at the post-test), and child survival (21% for the pre-test compared with 51% at the post-test). The difference was statistically significant in these two areas. It is also important to note that the most significant improvements occurred in the areas for which the scores were the lowest (t=1.32, df=38, p<0.05).

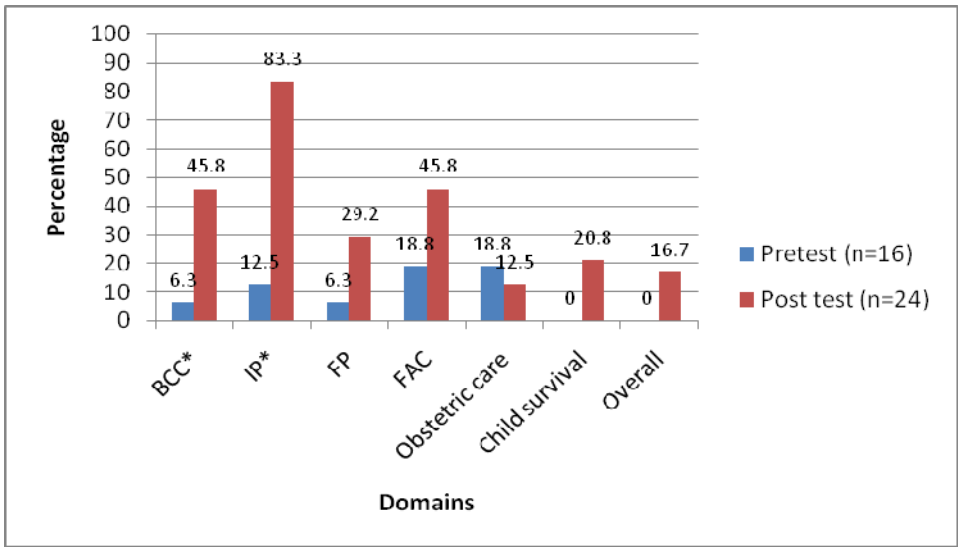
**Graph 14: Average Knowledge Score for EIG Obstetrical Nurses at Pre/Post Tests, by Subject Areas**




The results showed that at the pre-test none of the obstetrical nurses had reached or exceeded the ALK set at 70% for all areas, compared with 16.7% at the post-test. However, we can note a significant improvement in all areas except ANC. Thus, obstetrical nurses at least doubled their original scores and increased 20-fold in the area of child survival. The increase in BCC (t=2.36, df=18, p<0.05) and IP (t=4.18, df=18, p<0.05) are seven times and five times more important, respectively, and this difference is statistically significant.

It is, however, important to note that although obstetrical nurses had an overall lower level of knowledge than midwives, both at the pre-test and post-test, they boasted the highest margin of improvement in all areas.

**Graph 15: Percentage of EIG Obstetrical Nurses Who Met or Exceeded the ALK Set at 70% at the Pre/Post Tests, by Subject Areas**




## Comparison of EIG post-test results with results obtained in Sikasso and Ségou

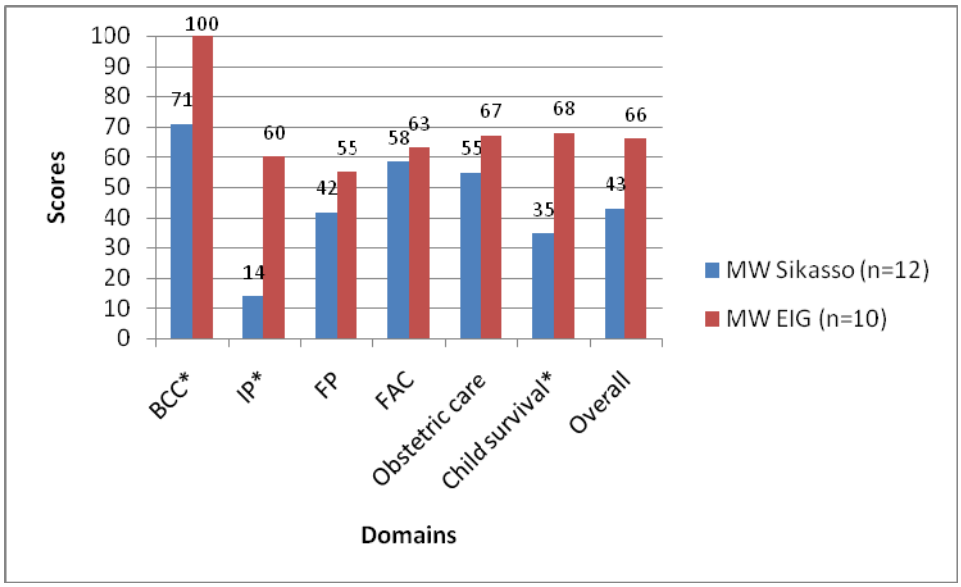
As previously indicated, the Project/Mali compared the EIG students' results with the results obtained by students in other schools with similar characteristics, namely the Ségou-based CFTSS, which trains obstetrical nurses, and the Sikasso-based INFSS, which focuses on midwives' training. The student's t-test was used in order to see whether the differences between the groups were statistically significant.

### *Comparison of EIG midwives' scores with the ones obtained at the Sikasso INFSS*

The analysis of skills and knowledge test results showed that midwives trained at the INFSS obtained an average overall score of 43%, which was below the ALK set at 70%. The best score was observed in the area of BCC (71%), while the lowest was reported in the area of IP (14%). In other areas, average scores ranged from 35% to 58%.

Compared with Sikasso, EIG midwives obtained a significantly higher score in all areas. This difference is statistically significant ($t=1.72$, $df=20$, $p<0.05$) in the areas of BCC, IP and child survival.

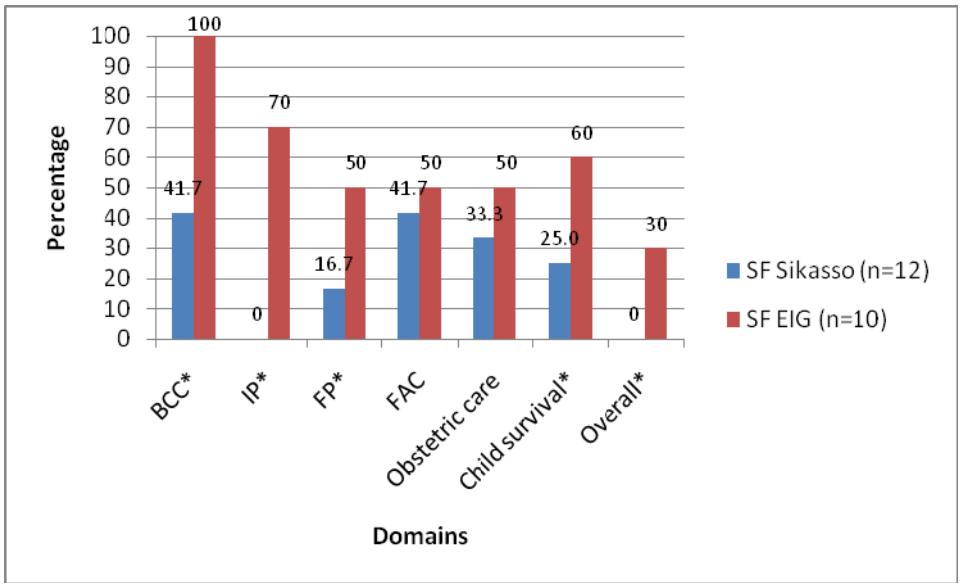
**Graph 16: Average Knowledge Scores for Sikasso and EIG Midwives, by Subject Areas**




None of the midwives trained at the Sikasso-based INFSS could obtain an overall score that at least reached the ALK. The number of participants who could reach or exceed the ALK is low in most areas—ranging from 16.7% for FP to 41.7% in the areas of BCC and focused ANC. In the area of IP, the students never met the ALK.

Conversely, 30% of EIG midwives obtained an overall score that was at least equal to the ALK. Their improvement in the areas of BCC, IP and child survival is particularly significant. On the whole and in these different areas, the difference that was observed is statistically significant ($t=1.72$, $df=20$, $p<0.05$).

**Graph 17: Percentage of the Sikasso and EIG Midwives That Met or Exceeded the ALK Set at 70%, by Subject Areas**

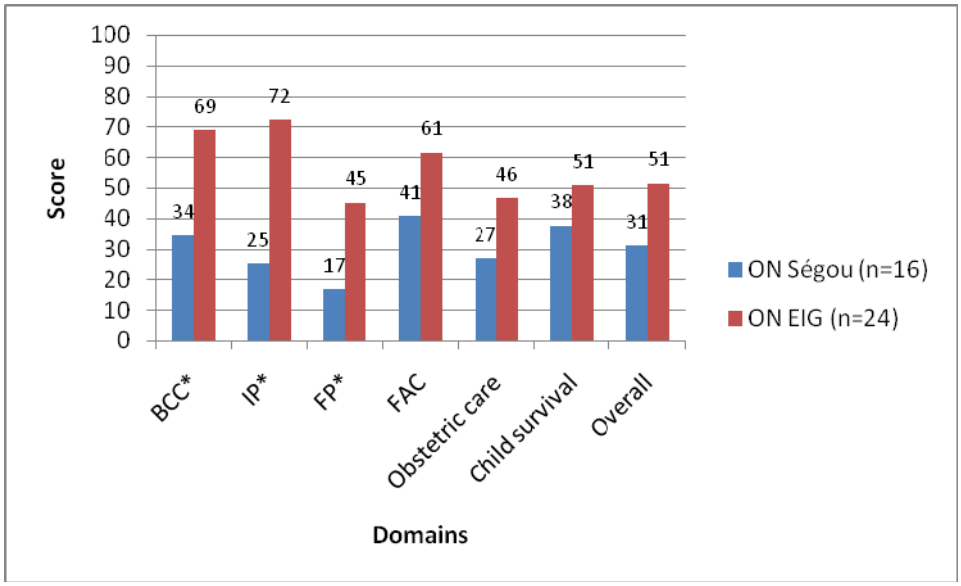


***Comparison of scores obtained by EIG and Ségou-based CFTSS obstetrical nurses***
Overall, the CFTSS obstetrical nurses obtained an average overall score of 31%, inferior to the ALK of 70%. Scores by subject areas ranged from 17% to 41% and the best scores were obtained in the areas of child survival (38%) and ANC (41%).

In all areas, the Project/Mali notes that obstetrical nurses trained at the EIG obtained an average global score of 51%, which was higher than the one obtained by the CFTSS obstetrical nurses in Ségou. This difference can be observed in all areas, especially in BCC, IP and FP, and was statistically significant ($t=1.68$, $df=38$, $p<0.05$).

Overall, it is also important to note that the average knowledge score for obstetrical nurses is lower than the one obtained by midwives no matter where they were originally trained.

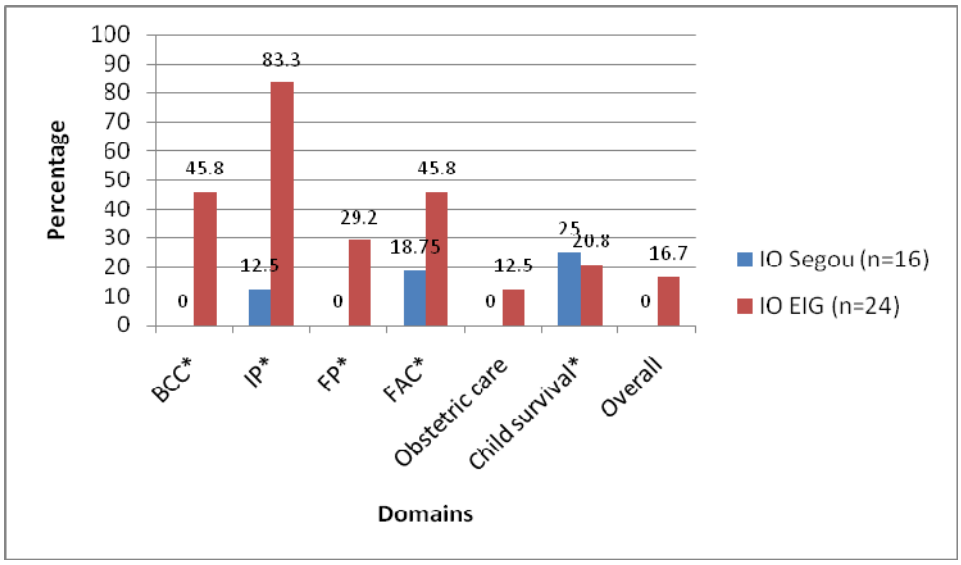
**Graph 18: Average Knowledge Score for EIG and Ségou Obstetrical Nurses, by Subject Areas**




None of the obstetrical nurses trained at the CFTSS in Ségou could reach the overall ALK. Moreover, apart from IP, ANC and child survival, obstetrical nurses could not meet the ALK.

For the obstetrical nurses trained at the EIG, 16.7% met the overall ALK. The percentage of nurses in this category who met the ALK varied from 12.5% to 83.3%, depending on the area. The comparison of these results with the ones obtained by obstetrical nurses in Ségou showed a significant difference in all areas except ANC

**Graph 19: Percentage of Ségou and EIG Obstetrical Nurses Who Met or Exceeded the Acceptable Level of Knowledge Set at 70%, by Subject Areas**




## Level of satisfaction among students, teachers, preceptors and managers with the learning intervention (process and results)

### Applicability of the modules

One of the objectives of this evaluation was to determine whether the new modules were user-friendly and applicable in local settings. In order to answer this question, the Capacity Project/Mali interviewed the teachers and preceptors during two separate orientation sessions.

After analyzing the questionnaires, it appeared that teachers were globally satisfied with the new modules. Overall, the content of the instructional materials was relevant and its design complied with standards in terms of relations between the various learning objectives, the training method and the content of the manuals. The instructional material was applicable in the sociocultural context for which it was used. In addition, its utilization was straightforward in terms of presentation, organization and content.

The participants thought the overall content of the trainer's guide was accurate and relevant. This was also true for the learning objectives and the teaching and evaluation methodologies. As for the content, the learning objectives and the integration of skills in the student's manual, the teachers and preceptors confirmed that they were accurate and relevant.

However, they made a few observations that will help improve the documents in the future, including reviewing the documents in order to make necessary corrections, and updating the content so that it complies with the country's national policies, standards and procedures. Additionally, they unanimously said that these modules could be taught at the school in a clear and practical manner as long as all the necessary instructional equipment and materials were available.

**Perceptions of the different parties involved regarding the implementation process and its results**

The different parties involved in the modules' implementation process were interviewed after the third year students' training (obstetrical nurse and midwives).

The teachers encountered the following main problems:

- Shortage of some demonstration materials, especially in the areas of ANC, FP and EmONC
- Certain teachers/preceptors' lack of computer skills
- Insufficient amount of time available to teach the class, due to the modules' excessive content
- Conflict between the training and other regional public health activities that were carried out at the same time and that involved the same people, for instance during the national immunization days
- Certain learning objectives were not clearly formulated
- Difficulty of mobilizing nonpermanent teachers for a long training period.

They mentioned that because of the availability of the school's managers and the devotion of the Bamako-based facilitators, most of these problems were fixed as the training unfolded.

Overall, the teachers thought that all the planned training activities were carried out as scheduled. It was not considered necessary to add objectives or contents. Moreover, the fact that no significant changes occurred among the management of the EIG or the teachers enabled the training sessions to be conducted as planned.

The teachers and preceptors very much appreciated the support they received from the school's managers and from the Bamako facilitators.

During the training, teachers learned important lessons, including the:

- Interactivity of the approach
- Necessity for teachers to prepare their classes in advance
- Efficiency of the methodology in the improvement of the students' level of knowledge
- Active participation by the students during the sessions
- Trust between the students and the teachers
- Usefulness of computer tools in the teaching approach
- Way that teamwork among teachers helped them fix certain gaps and strengthened their friendship
- Importance of harmonizing the teaching methods and the content of the curriculum.

They also made suggestions that could help improve the revision process for modules that have already been designed or that could facilitate the development of other modules. Most suggestions focused on the sufficient quantity of the instructional materials, the acceleration of the modules' validation process, the sustainability of the approach through constant support from IntraHealth International and the Capacity Project, teamwork among teachers and preceptors, the planning of training periods in order for students and teachers to be better prepared and to avoid an excessive workload.

Moreover, they mentioned they would like to expand the process to other teaching subjects, such as obstetrics and gynecology, anatomy, microbiology, pediatrics and surgery, and to other schools throughout the country,

Almost all EIG third year midwifery and obstetrical nursing students confirmed that they participated in all the training sessions on the new modules. The improvement of their skills and knowledge levels in the areas of RH/FP and child survival was their main source of motivation.

During the training process, they encountered certain difficulties. Indeed, they wished the participant's manual could have included clinical case studies. Also, they thought that the time allotted to certain classes was too short. These problems were solved by further explanations provided by the Bamako facilitators and the teachers, respectively. The students thought that the scheduled training activities took place as planned and that no other objectives or content needed to be added. According to them, the fact that there were no significant changes among the management of the EIG or the teachers contributed to the timely unfolding of the training sessions.

The changes in the teaching methodology that the students perceived included: the availability of teachers to answer questions; the use of new and more attractive and participatory teaching techniques; the diversity of the teaching methods used throughout the sessions; the increased use of classroom demonstrations; the teachers' proficiency in the subjects they taught; the presentation of a trainer's workplan; the effective participation of students during classes and the improvement of the level of skills and knowledge.

Additionally, students agreed that the teachers' support, devotion and level of attention during demonstration activities (anatomical model or video) had a positive impact on their level of skills and knowledge. The school was also very supportive and made large ventilated classrooms available to students along with adequate instructional materials. All students suggested the extension of this approach to other subjects and to other public health schools.

The interviews of the school's managers revealed certain problems, some of which were solved over the course of the training. These problems included the lack of computer hardware and multimedia software, the mobilization of nonpermanent teachers over long training periods and the shortage of demonstration materials in certain areas, such as child survival and FP.

The managers confirmed that the scheduled training activities unfolded as planned and that they did not add any objectives or content. According to them, the fact that there were no

significant changes among the management of the EIG or the teachers contributed to the timely unfolding of the training sessions.

Some lessons learned during the implementation process included:

- A well informed staff and adequate instructional materials are necessary in order to improve the students' level of knowledge
- The work environment has a direct influence on the modules' implementation process.

Implementers also made the following suggestions for future use:

- Secure permanent support from the implementation partners, especially IntraHealth International
- Extend the *LFP* approach to all subjects
- Implement a merit system to motivate all teachers and preceptors.

Overall, the school's managers were satisfied with the process. According to them, the students' level of skills and knowledge drastically improved. The approach helped students, teachers and preceptors become aware of what areas they needed to strengthen. The approach also fostered active participation.

The managers reported that overall most resources were available in order for the process to be successfully implemented. The EIG's managers very much appreciated the support they received during the development of the new modules. This helped them access instructional materials and resources, while improving the general level of students, teachers and preceptors. They were also satisfied with the modules' development and implementation process. Indeed, this participatory process enabled the EIG to play a key role in the training. Finally, this process helped produce modules that could be applied to all public health schools in Mali. The produced materials were a source of satisfaction and the practice of the new modules remained efficient even if some improvements were still considered necessary. No students, teachers or preceptors reported complaints regarding the new modules' implementation process.

The managers of the EIG said they would be willing to expand this approach to all teaching subjects within the school in order to standardize the system. However, they told us that they did not have enough resources available in order to apply this approach to do so. Support from IntraHealth International and the Capacity Project would; therefore, still be necessary.

According to them, this practical approach should also be expanded to all public health schools across Mali in order to have a standardized education system and ensure quality training in the area of RH/FP. In addition, this approach is considered very practical.

# Discussion

The modules development and implementation process started in August 2006 through a needs evaluation. It mobilized significant human and financial resources at the EIG level and also

among various partners. As it is the case with any given process, this intervention benefitted from favorable conditions while obstacles in each phase also had to be overcome.

The Capacity Project/Mali observed three essential favorable factors during the development and implementation process:

- *Commitment and leadership displayed by the EIG*: The process was made possible by the school's commitment. The school's managers rapidly understood the critical need for quality teaching strengthening in order to improve the students' level of skills and knowledge and provide quality services to the population. The school also had a pivotal role in the mobilization of all the local public health actors (decision-makers, users, trainers and health providers).
- *Availability of a technical and financial partner*: USAID, through the IntraHealth International-led Capacity Project and other partners, made significant financial and technical resources available to the school.
- *Availability and commitment of teachers and preceptors*: The teachers and preceptors expressed the need to improve the level of skills and knowledge among future health providers in order to reduce maternal and child mortality. It is also important to note that the teachers and preceptors were willing to improve the way they taught.

Despite these favorable conditions for the development of new modules, the implementation process was hindered by a few obstacles, including:

- *The instability of nonpermanent teachers*: the participation of nonpermanent teachers during all the stages of the implementation process generated problems in terms of continuity, as some of these teachers were not present during all phases. This prevented them from having a full grasp of the approach and the instructional material.
- *The shortage of instructional materials in some areas*: The instructional materials developed according to the *LFP* approach focus on demonstration and practice using anatomical models. This requires that enough quality materials are available. An adequate supply of some of these materials was not available during the modules' implementation process. This affected teaching in some areas such as FP, ANC and ENC.
- *The lack of financial resources at the EIG*: Because of a lack of adequate resources, the EIG had many problems developing local initiatives. Also, the school did not have the required quantity of instructional materials to be used in the teaching of the new modules. Additionally, although the EIG would like to expand the approach to other subjects, it remains unable to do so without external support. This raises the issue of the approach's sustainability. Indeed, even though the school has the technical capacity required to develop new modules using the *LFP* approach, the development and implementation process could be problematic, especially in terms of availability and management of the instructional materials needed. The school, however, seems ready to address this challenge, as it has already committed itself to the development of three additional modules, thus displaying effective ownership of the approach.

Throughout the process, the different parties involved learned a number of important lessons:

- The *LFP* approach efficiently contributes to the improvement of the skills and knowledge level among students, teachers and preceptors through the diversity of learning methods and the harmonization of the modules' objectives and content. Moreover, this approach helps link pre-service education to the needs assessed in the field.
- The *LFP* approach fosters interactivity among teachers and students.
- Teamwork among teachers and preceptors helps address knowledge gaps and improving relations, while enabling more effective monitoring of students during their clinical practica.
- The *LFP* approach motivates students during classes.
- A well trained, available staff is necessary to improve the quality of training for students.
- The availability of instructional materials, computer tools and a positive work environment is crucial in order to provide quality training to future health providers.

## Conclusion and Recommendations

The purpose of this evaluation was to document the implementation of the *LFP* approach in the revision of the EIG's curriculum.

The results of the interviews and the review of documents showed that the *LFP* approach enabled different stakeholders to work closely together. As a matter of fact, the development and implementation process of the new modules (RH/FP and child survival 0-5) involved all the local health partners, including the director of the EIG, community health associations, the regional health directorate, former students, as well as the school's teachers and preceptors. Overall, these partners were satisfied with the process, especially the fact that they shared their experiences and reached consensus during the process of adapting the documents. They also appreciated the effective participatory process throughout the different stages, the mobilization of resources by the school's management through the support of its different partners and the significant level of commitment displayed by the school's managers.

There were no major problems during the modules' implementation process due to the adequate commitment and preparation of trainers and preceptors. That is the reason why trainers, preceptors and students all agree that the training took place in the most optimal conditions. They considered the time allotted for the different sessions acceptable, even though efforts still had to be made in certain areas. The teachers met the students' expectations.

The process of implementing the *LFP* at the EIG led to an innovation in terms of training methodologies. One aspect of the approach that participants especially appreciated was the use of various methods depending on the learning objectives. Participants also appreciated the demonstrations and group work, as they helped strengthen the students' skills and knowledge while fostering participation and interactivity.

Through the *LFP's* implementation process, the EIG built significant institutional capacity. Indeed, the teachers, including the clinical preceptors, learned the new modules and received needed

instructional materials. The school strengthened its information technology capacity through procurement of additional materials, internet connection and trainings. The implementation process resulted in a strategic plan for the EIG, and the support from the Capacity Project generated new financing sources, especially through the New Peak Foundation, for scholarships and the creation of a polyclinic adjoining the school and aimed at becoming a practicum site.

The implementation of the new modules emphasized some inadequacies in the training system, including the absence of a formal consultation mechanism among teachers and clinical preceptors to share information regarding the students' practical learning process. Furthermore, implementers noted other gaps such as irregular supervision visits for students at practicum sites and insufficient training among some teachers and preceptors in the areas of FP and EmONC.

The implementation of the *LFP*-based modules improved the students' results significantly. Indeed, the pre- and post-test results at the EIG showed a clear progression of students in terms of skills and knowledge after the training took place. This difference could be observed in every area. The Capacity Project/Mali observed similar results when it compared the post-test results obtained at the EIG and the ones obtained in the schools that were part of the case-control study in Sikasso (midwives) and Ségou (obstetrical nurses) where the *LFP* approach was not used.

It appeared that the new modules developed using the *LFP* approach could possibly be implemented in other public health schools with similar characteristics. In addition, the teachers and preceptors agreed that the teaching of the new modules would not interfere with the local sociocultural context. They thought the documents were appropriate and relevant in terms of content, objectives and learning methodology. However, it will be necessary to review the documents in order to correct typos and update certain data.

Overall, the principal stakeholders involved in the new modules' development and implementation process have a good perception of the approach. Furthermore, its application in the development of two new modules is viewed as a success. The need to expand it to other subjects and public health schools has also often been expressed.

Based on these encouraging results, the following recommendations were made for the EIG and the INFSS:

- Integrate the documents about lessons learned from the implementation of the new modules. The EIG teachers made recommendations during the review sessions regarding the changes to be made in the modules. These modifications should be reviewed and incorporated in the documents.
- Accelerate the new modules' validation process by the INFSS so that they can be integrated in the official training curricula
- Expand this approach to other subjects taught at the EIG and to other schools

- Maintain the support provided to the EIG by the different partners in the purchase of new materials, the development of new modules and the strengthening of a support system focusing on teachers, preceptors and students
- Implement a formal consultation mechanism among teachers and clinical preceptors in order to share information related to the students' practical learning process
- Strengthen supervision systems for students at the practicum sites
- Strengthen the teachers' and preceptors' skills and knowledge in the areas of FP and EmONC and encourage the use of computer tools as part of the teaching methodology.

# Annex A: Lists of Participants

**List of participants in the orientation workshop in the *Learning for Performance* approach (August 2006)**

| No. | Name | Position | Service |
|---|---|---|---|
| 1 | Dr. Hammada Maiga | Director | EIG |
| 2 | Mrs. Touré Mariam Maiga | Senior Midwife | Regional Health Directorate |
| 3 | Aoua Amadou | Clinical Instructor | EIG |
| 4 | Mrs. Maiga Marie | Senior Midwife | District Hospital |
| 5 | Dr. Traoré Oumar N | Regional Reproductive Health and Family Planning Program Manager | Regional Health Directorate |
| 6 | Dr. Mohamed Salia Maiga | Academic Director | EIG |
| 7 | Dr. Cissé Hamidou | Permanent Faculty | EIG |
| 8 | Dr. Traoré Alassane | Clinician and Head of Genecology and Obstetric Department | Regional Referral Hospital |
| 9 | Dr. Agassoumane Maiga | Faculty | EIG |
| 10 | Dr. Kalifa A Traoré | Regional Adviser Reproductive Health | Regional Health Directorate |
| 11 | Halimatou Aliou | Registered Nurse (EIG Alumni) | Regional Referral Hospital |
| 12 | Aminata Sidibé | Registered Nurse (EIG Alumni) | Regional Referral Hospital |

**List of the participants in the new EIG training modules' development workshop using the *Learning for Performance* approach (July 2007)**

| No. | Name | Position | Service |
|---|---|---|---|
| 1 | Nouhou Coulibaly | Doctor | CREF |
| 2 | Hamidou Cissé | Doctor | EIG |
| 3 | Oumar Diallo | Doctor | HRG |
| 4 | Cissoko Lala Sidibé | Doctor | HRG |
| 5 | Hamada Maiga | Doctor | EIG |
| 6 | Maiga Marie | Midwife | CSREF |
| 7 | Haidara Fatoumata Sanogo | Midwife | CSCOM Gadeye |
| 8 | Maiga Aoua Maiga | Tutor | EIG |

**List of participants in the orientation workshop for the school's teachers and preceptors (May 2008)**

| | Name | Position | Service |
|---|---|---|---|
| 1 | Dr. Clissé Hamidou | EIG Doctor | EIG |
| 2 | Dr. Moussa Salihou Maiga | Hospital Doctor | HRG |
| 3 | Dr. Abdoul-Wahab Soumma | EIG Doctor | EIG |
| 4 | Dr. Djibrilla I. Touré | Hospital Doctor | HRG |
| 5 | Dr. Yiriba Coulibaly | EIG Doctor | EIG |
| 6 | Dr. Youssouf Almoustapha Touré | EIG Doctor | EIG |
| 7 | Mrs. Maiga Aoua Amadou | EIG Tutor | EIG |
| 8 | Mrs. Touré Nana Touré | Midwife Csref Bourem | CSREF |
| 9 | Mrs. Cissé Adizatou Maiga | EIG Midwife tutor | EIG |
| 10 | Mrs. Cissé Fadimata Yattara | Hospital health technician | HRG |

# Annex B: Temporary Planning for the Distribution of Reproductive Health/Family Planning and Child Survival (0-5) Classes at the Gao Nursing School

| | First Year | Second Year | Third Year |
|---|---|---|---|
| **Reproductive Health and Family Planning** | | | |
| **BCC** | General aspects of communication | Communication techniques | Specific counseling |
| **ANC** | Genital organs (anatomy and physiology + pelvis)<br>Normal pregnancy (Obstetrical physiology) | Pelvic anatomy and physiology (bone and tissues)<br>Pelvic exam<br>Pregnancy diagnostic<br>ANC | Obstetrical exam<br>Management of pregnancy complications |
| **Childbirth** | | Child delivery stages<br>Materials/conditions for a clean delivery<br>Different types of childbirths<br>Monitoring childbirths<br>Maternal and neonatal care<br>Monitoring of mother and newborn during the six hours following delivery<br>Curative and preventive care during childbirth | Management of complications occurring during childbirth<br>Curative and preventive care during delivery |
| **Postnatal care** | | Normal deliveries and monitoring processes | Management of abnormal deliveries |
| **Abortion** | | General aspects of abortion | Management of postabortion complications |
| **Sexual dysfunction** | Sexual dysfunction | Menopause | Management of sexual dysfunctions |
| **STI** | | Clinical symptoms of STI, causes, complications and prevention | Syndromic approaches |
| **FP** | | General aspects of FP (concept and methods) | FP consultation |
| **Gender and Health** | | | + |
| **Prevention of infections** | Prevention of infections techniques<br>Rules and materials | + | + |
| **Child survival (0-5 years old)** | | | |
| **Essential newborn care** | | + | + |
| **Immunization** | | General aspects of immunizations | Management of vaccines and cold chain |
| **Nutrition** | General aspects of nutrition | Conditions related to nutritional deficiency | Management of malnutrition<br>Nutrition education<br>Nutrition evaluation (growth monitoring ) |
| **IMCI** | | | + |
| **EmNC** | | Neonatal distress<br>Respiratory failure<br>Anemia<br>Low birth weight<br>Newborn infections | + |

# Annex C: Lists of Instructional Materials

**Demonstration Materials**

| Materials | Available quantity | Needs expressed |
|---|---|---|
| Sphygmomanometer (BP cuff) | 1 | 30 |
| Thermometer | 4 | 12 boxes |
| IM model | 1 | 6 |
| IV model | 1 | 6 |
| Tool kit | 3 | 20 |
| Instrument drum | 4 | 15 |
| Instrument tray with cover | 4 | 15 |
| Kidney tray | 3 | 20 |
| Instrument carts | 2 | 10 |
| Bed with mattress | 1 | 6 |
| Examination table | 1 | 7 |
| IV stand | 1 | 10 |
| Weighing scale | 1 | 6 |
| Obstetrical Stethoscope | 1 | 20 |
| Speculum | 3 | 20 |

**Missing Materials**

| Materials | Expressed needs |
|---|---|
| Disposable syringe | 200 |
| Oxygen mask | 20 |
| Newborn aspirator | 10 (with suction system) |
| Newborn anatomic model (respiratory system) | 10 |
| Bladder model | 8 |
| Portable examination lamp | 10 (with carrying device) |
| Materials used for newborn dimensions and weights (Measuring tape, baby scale) | 10 |
| Trashcan with pedal-activated lid | 10 |
| Step ladder | 15 |
| Plastic and undersheet | 20/20 |
| Enema kit | 5 |
| Sterile gloves | 50 boxes |
| Cold pack for vaccines | 20 |
| Vaccination equipment | 10 |
| Instrument tray with cover | 10 |
| Samples of various contraceptive methods | 20 |
| Clock/timer | 6 |

**Audiovisual Materials (films)**

| Chapter | Name of the film | Available | Not available |
|---|---|---|---|
| BCC | RH/FP consultations<br>Counseling<br>Home visits | | No |
| Focused ANC | Focused ANC consultation<br>Fetal positions during pregnancy | | No |

| Chapter | Name of the film | Available | Not available |
|---|---|---|---|
| Normal childbirths | Stages of a normal delivery<br>Techniques for the management of delivery-related complications: episiotomy, uterine version, artificial delivery | Yes<br>Yes | |
| FP | Advantages of FP and contraception in the socio-economic development of a family or a country<br>FP counseling<br>Utilization of all the contraceptive methods in Mali | | No |
| Gender and health | Excision: complications and consequences | Yes | |
| STI | STI complications | | No |
| IP | Techniques for hand washing<br>Techniques to eliminate biomedical waste | | No |
| ANC | Newborn examination | | No |
| EmNC | Examination of an abnormal newborn<br>neonatal resuscitation | | No |
| Nutrition | Problems due to micro-nutrients deficiency and effects of malnutrition on public health<br>Management of marasmus and kwashiorkor<br>Importance of maternal breast-feeding and exclusive breast-feeding techniques | | No |
| IMCI | Importance of IMCI in public health | | No |

# Annex D: Informed Consent Form

**Hi! My name is**…… (Name of the interviewer) I work for the Capacity Project, which is implemented in Mali in order to strengthen the capacity of the Ministry of Health in terms of human resources. You have been asked to take part in a survey aimed at collecting feedback regarding the new training modules' implementation process in the areas of RH/FP and child survival (0-5 years) at the Gao Nursing School. We would like you to share your thoughts regarding this project.

**Your participation will remain entirely voluntary** and you will not suffer adverse consequences should you choose not to participate in the survey. **You will not have to answer questions** that make you feel uncomfortable. You have **the right to ask questions** and you **can interrupt this interview at any moment**. Your willingness or refusal to answer certain questions will not be shared with anyone. Should you decide to participate in the survey, you will be asked questions related to your experience and your opinion regarding the new modules' implementation process at the Gao Nursing School. The interview should take about an hour. Your name will not be mentioned in the survey and it will not be recorded on this questionnaire. The conversation we are about to have will remain **strictly confidential**.

It is unlikely that the topics we are about to discuss will make you uncomfortable. Your participation in the survey will contribute to the improvement of the new modules.

Do you have any questions?

**Do you want to participate in the survey?**

**Yes □ No □**

Should you need to contact us after this session, please contact the Capacity Project Country Director, Dr. Cheick Oumar Toure. Tel: 222.87.83.

**Instructions for the interviewer: Make sure that a separate sheet of paper is given to each interviewee with information about the person to contact. If the answer is YES, please proceed with the interview. If the answer is NO, please thank the person and ask the next potential participant.**

**The Capacity Project** is an innovative global initiative funded by the United States Agency for International Development (USAID). The Capacity Project applies proven and promising approaches to improve the quality and use of priority health care services in developing countries by:

- Improving workforce planning and leadership
- Developing better education and training programs for the workforce
- Strengthening systems to support workforce performance.

***The Capacity Project Partnership***

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