WORKING PAPERS:
EXPANDED BASIC EDUCATION PROGRAM

SCHOOL READINESS PROGRAM:

Assessment Report

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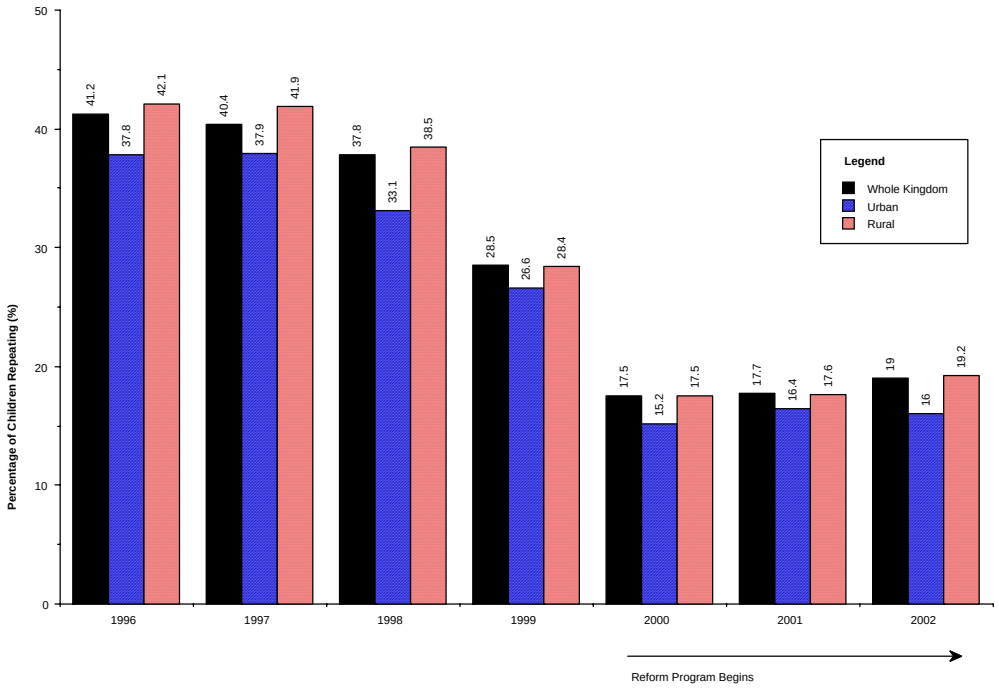
1. BACKGROUND

1.1. ***Rationale for the School Readiness Program***

At the end of the last decade, repetition rates in Grade 1 were stuck at the calamitous level of around 40% per annum. Time after time, Grade 1 children had the worst rates of promotion of any grade grouping at primary school level. This was particularly true of children studying in rural areas where repetition rates were consistently higher than those in urban schools. To be sure, the introduction of remedial classes in the year 2000 did achieve major success in reducing repetition rates by about half (see Figure 1.1). Under this program, children failing the year were given opportunities for supplementary learning in the summer vacation months followed by retesting. These remedial classes were part of the government's education reform program that also began in 2000. This fact notwithstanding, little progress has been seen over the last several years in making further reductions in the number of children who repeat each year. In this respect, national Grade 1 repetition rates have fluctuated between 17 and 19% since the year 2000.

In response to the above situation, educators in Cambodia have recently been exploring new strategies to recapture the previous positive momentum. One such proposed strategy has been the establishment of an 8-week *school readiness course* for Grade 1 children that builds foundational skills in academic subjects; promotes learning friendly classroom environments; and strengthens learner confidence.

Figure 1.1: Historical Rates of Repetition at Grade 1 Level, 1996-2002



Source: EMIS, 1997-2003

The School Readiness Program (SRP) was designed by an interdepartmental grouping of Cambodian educators, with technical and material support from UNICEF, during the summer vacation and implemented at the beginning of the 2004/5 academic year. By introducing a readiness course in the first two months of a child's formal education, the Ministry and UNICEF hope to compensate for the lack of formal pre-schooling and generally poor early childhood development experiences that an under-

resourced education sector in Cambodia is currently unable to overcome. The School Readiness Program was piloted in school clusters supported directly or indirectly by UNICEF. Approximately 544 teachers participated in the program in Kampong Thom, Prey Veng, and Kampong Cham Provinces.

1.2. Evaluation Methodology

In order to assess the effectiveness of SRP, UNICEF has commissioned KAPE, a local Cambodian NGO, to develop a monitoring framework that would enable the following:

1. Formal evaluation of teacher performance among a sample of teachers using a standardized classroom observation instrument.
2. Assessment of implementation procedures including the effectiveness of workshops, usefulness of training content, and support by school directors and communities.
3. Assessment of the appropriateness of the piloted curriculum with respect to the official Grade 1 curriculum (in collaboration with PRD and advisers working in the Cambodia Basic Education program).
4. Pre-testing to determine the extent to which children may already have acquired readiness skills before receiving any interventions.
5. Post-testing at the end of the 8-week program to determine the degree to which interventions have had any impact on the acquisition of foundational learning skills in language, mathematics, social studies, and pseudo-scientific concepts
6. Formal measurement of children's terminal learning achievement in comparison to a control group (to be undertaken at the end of the academic year).

In developing this framework, KAPE has worked closely with Ministry personnel, particularly those in the Primary Education Dept. and the Pedagogical Research Dept. as well as UNICEF staff and colleagues in related programs such as the USAID supported Cambodia Basic Education Project (CBE). All instruments were developed collaboratively and approved officially by the Ministry of Education, Youth, and Sport. A more detailed description of how assessment activities were undertaken is provided below.

1.2.1. Assessment of Teacher Performance

Teacher assessments discussed in this paper are based on classroom observations conducted jointly by the Ministry of Education, Youth, and Sport and KAPE staff. These assessments were summative in nature but did include post-observation teacher interviews to gauge the problems encountered and the successes achieved. A sample of teachers comprising 46 individuals across all 3 provinces was constructed on the basis of schools that were selected for student pre-testing under a parallel program assessment activity. At least one teacher was observed in each of the schools selected for testing so that direct comparisons could be made between assessments of teaching practice and independent evaluation of children's learning. The sample of teachers comprised about 8% of the population of teachers participating in the pilot. The schools selected for observation and testing represent a mix of localities with respect to socio-economic status and urban/rural characteristics.

KAPE developed a standardized observation tool for the purpose described above that was reviewed and formally adopted by the Ministry (see Attachment 1). The tool covered 12 performance variables in 3 categories: (i) Classroom Organization; (ii) Teaching & Learning; and (iii) Development of Key Skills (coordination, cognitive thinking, use of the senses, and expression). A baseline was established during a first round of classroom observations with Ministry staff in early November followed by a set of post-observations in early December. It had been hoped that this baseline could have been established earlier but the number of holidays during the early weeks of program implementation proved to be a considerable hindrance. KAPE staff provided training to both Ministry and local personnel in using the classroom observation instrument during a 3-day workshop. This classroom observation in-

strument was also used formatively by province and district-based supervisors to provide more formalized feedback to teachers.

1.2.2. Assessment of Program Implementation Procedures

Assessment activities in this area derived primarily from focus group discussions with participating teachers in all 3 provinces. In all 65 teachers across 30 primary schools participated in such discussions. These discussions were guided by a standardized framework of questions and follow-up points (see Attachment 2). Thus, the analyses presented in this section use qualitative data that was drawn primarily from teachers' opinions about the following: (i) presentation methodology employed during teacher training workshops; (ii) the relevance and appropriateness of workshop content; (iii) teachers' overall assessment of the program's effectiveness; (iv) relationship between SRP curricula and the textbook; (v) impact on children's learning; (vi) the effectiveness of supervisory support; (vii) obstacles in teaching; (viii) parental viewpoints about the program; and (ix) support from school directors.

1.2.3. Assessment of Compatibility with National Curriculum

Because the School Readiness Program aims to build foundational learning skills to better equip children to successfully master the official curriculum, UNICEF requested KAPE to conduct a brief content analysis that would determine the compatibility between both sets of curricula and in particular if there were any major contradictions between the two. This entailed a review of tangible documents that represent the official curriculum and their own internal consistency. In general, there are two such curriculum documents, namely the textbook itself and the associated teacher guide as well as what is called the "Core Curriculum." The latter lists intended learning outcomes and recommended allocations of instructional time to each lesson. Following a review of the official curriculum, a comparative analysis was carried out, which identified similarities and differences with both the textbook and the Core Curriculum vis a vis the SRP curriculum.

1.2.4. Testing of children

As part of its technical assistance, KAPE also conducted pre- and post-testing in a sample of 931 children in 20 schools spread across all 3 provinces. As noted above, schools were selected in a way that ensured a representative mix of schools with respect to socio-economic status of communes (using census data) and urban/rural characteristics. Children were assigned to experimental and control conditions to help determine the extent to which changes in learning could be accounted for by participation in SRP. Pre-testing activities had a two-fold purpose. These were to (i) determine the extent to which children may already have acquired targeted skills before the intervention began and (ii) to establish a baseline to determine the extent to which children's foundational learning skills improved. A post-test was administered in December, 2004 with the same children. In contrast to the manner in which tests in Grade 1 have traditionally been carried out in Cambodia, KAPE administered test batteries in an interview format with children on a one-on-one basis. This approach recognizes the inappropriateness of written tests with children at this age level. Staff from the Pedagogical Research Dept reviewed and recognized all test instruments developed for the purpose.

KAPE developed a standardized testing instrument according to a pre-planned table of specifications that is based on the content charts provided by the Ministry of Education, Youth, and Sports (see Attachment 3). Test content covers 17 competency areas that cut across Spatial-Mathematical, Verbal, Social/Cultural, and Pseudo-scientific skills and concepts. Special emphasis has been placed on spatial-mathematical and verbal content areas, which together comprise about two-thirds of the total points on the test. Tasks have been classified according to thinking skills requiring memory, comprehension, or application. In this respect, memory tasks comprise 29% of point awards, comprehension tasks comprise 51%, and application comprises 21%. In all, the test takes in a total of 71 items that mostly consist of tasks requiring oral responses or psycho-kinetic manipulations of test material. This allowed test content to be covered quickly.

Test items were pre-tested on a small sample of children that included prospective "first-time" enrollees as well as repeaters and former pre-schoolers in a school that straddles an urban and rural community. This ensured a mix of children of different socio-economic and demographic backgrounds. Test items were analyzed with respect to levels of difficulty and discrimination using classical *true score test theory models* (i.e., as opposed to latent trait models). The final test used in assessment of children's learning outcomes retained items of moderate difficulty and high discrimination. Tests were also reviewed in terms of administration time for each child, the clarity of directions, and the effectiveness of examples.

KAPE also proposes to conduct a standardized test in the same statistically randomized sample of classes to assess children's terminal learning achievement. For this particular test administration, there will also be a control group consisting of a similar number of classes, which will be tested in parallel with the experimental group. Experimental and control conditions will be designed to ensure valid comparisons between classes that are equivalent in terms of the following characteristics:

- urban/rural setting
- commune poverty rates
- pupil teacher ratio

These testing activities will be conducted near the end of the school year. This is because the 8-week course is not curriculum-based but instead seeks to provide a foundation that allows children to more easily acquire, understand, and use curricular content that teachers will present during the remaining months of the school year. The theory underpinning the school readiness course suggests that children with a higher degree of "readiness" will acquire competencies outlined in the formal curriculum more successfully than children who do not pass through a structured readiness phase.

2. IMPACT ON TEACHER PRACTICE

2.1. Observed Changes in Teacher Practice along Selected Parameters

As noted above, 46 teachers were observed by KAPE and Ministry staff during program implementation. Each teacher was observed twice over a period of 4 to 5 weeks for a total of 92 summative observations. Analyses of change in teacher performance are presented in terms of 12 factors that take in (i) Classroom Organization, (ii) Teaching and Learning, and (iii) the Development of Key Skills. On average, teachers in all 3 provinces showed improvement for each of the parameters evaluated. These results are presented in Table 2.1. In this respect, the overall average score for all parameters across all provinces improved from 63% to 75% between 1st and 2nd round observations or an increase of 12%. Teachers in Kampong Thom registered the highest average score (78%) followed by Kampong Cham (75%) and Prey Veng (71%). It should be pointed out, however, that teachers in Prey Veng showed the greatest change in performance score, improving from a baseline of 54% to 71%, or a change of 17%. Kampong Cham teachers showed the least change (4%) and Kampong Thom teachers a modest change of 12%.

For the three broad parameter areas mentioned above, 2nd round observation scores are significantly different from baseline observations at a probability level of $p<.005$. The 3 highest scoring parameters during 2nd round observations included Furniture Arrangement (91%), Classroom Atmosphere (85%) and Time Management (82%); conversely, the 3 lowest average scores were found in Pupil Engagement (59%), Development of Body Coordination (64%),

and Expression of Emotion and Values (67%).

Table 2.1: Average Scores for Teacher Performance along Selected Parameters

Parameter		Kampong Thom		Prey Veng		Kampong Cham		All Provinces	
		1st Rnd	***2nd Rnd***	***1st Rnd***	***2nd Rnd***	***1st Rnd***	***2nd Rnd***	***1st Rnd***	***2nd Rnd***
Classroom Organization	Classroom Display	63%	84%	43%	78%	78%	81%	59%	81%
	Furniture Arrangement	90%	92%	82%	88%	94%	94%	88%	91%
	Cleanliness & Order	82%	86%	69%	69%	83%	83%	78%	79%
	Subtotal	***78%***	***88%***	***65%***	***78%***	***85%***	***86%***	***75%***	***84%***
Teaching & Learning	Time Management	73%	81%	55%	81%	70%	85%	66%	82%
	Pupil Engagement	49%	62%	36%	54%	57%	60%	47%	59%
	Teacher Questions	68%	86%	56%	76%	68%	75%	64%	80%
	Teaching Aids	69%	81%	47%	73%	72%	78%	62%	77%
	Classroom Atmosphere	81%	89%	62%	82%	77%	82%	73%	85%
	Subtotal	***68%***	***80%***	***52%***	***73%***	***69%***	***76%***	***62%***	***77%***
Development of Key Skills	Developing Coordination	52%	62%	58%	64%	67%	67%	58%	64%
	Cognitive Thinking	62%	74%	51%	62%	65%	68%	59%	68%
	Use of the Senses	61%	81%	47%	71%	70%	75%	58%	76%
	Expression of Emotion/Value	54%	72%	51%	60%	68%	70%	57%	67%
	Subtotal	***57%***	***72%***	***51%***	***64%***	***68%***	***70%***	***58%***	***69%***
GRAND TOTAL		**66%**	**78%**	**54%**	**71%**	**71%**	**75%**	**63%**	**75%**

N=46

It is prudent to balance assessments based on the magnitude of terminal performance scores against the extent of change from baseline to terminal scores (see Figure 2.1). For example, though Pupil Engagement comes out lower on average than other parameters in relative terms, it is important to temper this remark against the observation that Engagement started out from the lowest base of any parameter (47%) and showed considerable improvement during 2nd round observations. This was particularly true in Prey Veng Province where baseline scores along this parameter changed from 36% to 54%, or a difference of 18%. Indeed, impressive improvements were true of several performance parameters including Classroom Display (+22%), Use of the Senses (+18%), and Time Management/Teacher Questions (+16%). On the other hand, performance parameters showing the least change included Cleanliness and Order (+1%), Furniture Arrangement (+3%), and Development of Body Coordination (+6%).

It is also important to qualify the average score outcomes reported in Table 2.1 by pointing out that not all teachers observed showed improvement in their performance. Indeed, 24% of teachers showed declines in overall (i.e., Grand Total) performance scores while 2% showed no change (see Table 2.2). This observation is balanced, of course, by the fact that 74% of teachers did register some improve-

ment in their performance, particularly with respect to the Development of Key Skills where the largest proportion of teachers showed improvement in their average scores (74%).

Figure 2.1: Change in Teacher Performance on Selected Parameters

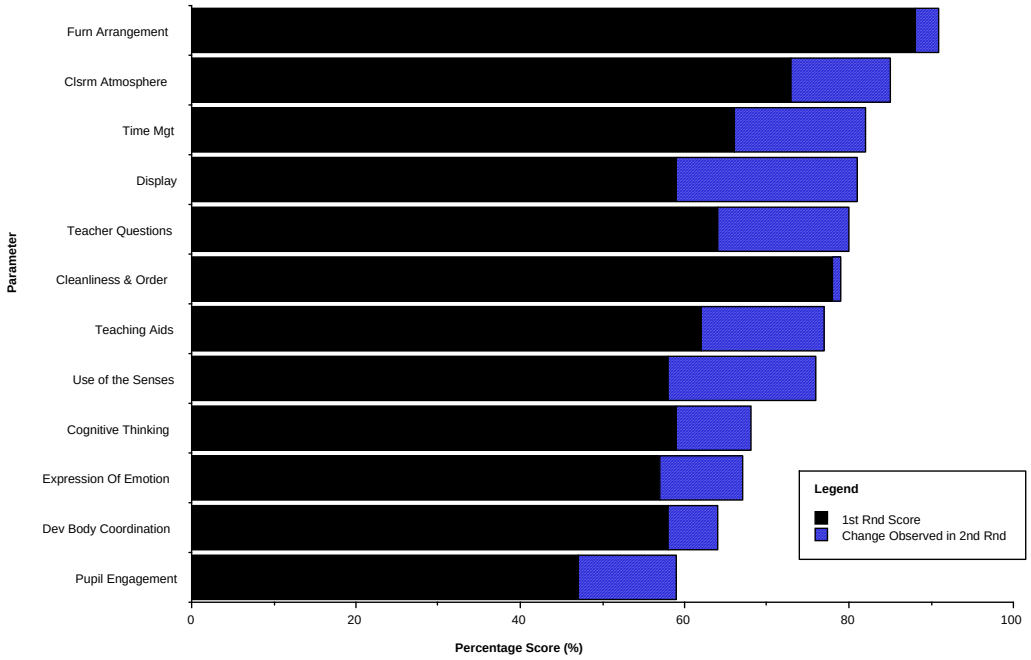


Table 2.2: Teachers Showing Improvement, Decline, or No Change in Performance Scores

Parameter	Percentage of Teachers Showing			
	Improvement	**Decline**	**No Change**	**Decline or No Change**
(1) Classrm Organization	63%	17%	20%	37%
(2) Teaching & Learning	67%	24%	9%	33%
(3) Development of Key Skills	74%	17%	9%	26%
Grand Total	**74%**	**24%**	**2%**	**26%**

N=46

Analyses of teacher performance also include a review of "effect sizes" between 1st and 2nd round observation mean scores. Considerations of effect size are one useful way to assess the magnitude of mean differences between average scores. Such analyses give some indication of the practical importance of observed differences between an experimental and control group, or in this case, between a pre- and post-observation set of scores. Effect size is calculated by establishing the size of a mean difference relative to the standard deviation of each distribution of scores. This may involve taking an average of the standard deviations of both distributions or the larger of the two. In the current context, the average standard deviation of 1st and 2nd round scores has been used. In general, effect sizes that constitute 80% or more of the chosen standard deviation are considered to represent major change; those that constitute 50% are considered moderate; and those that constitute 20% or less are considered minor. Using this rule of thumb, effect sizes shown in Table 2.3 indicate moderate to major changes in classroom practice across the three broad parameter categories used. This was particularly true of the mean difference for Teaching and Learning scores where the mean difference between 1st and 2nd round observations was 15% and the effect size was found to be 0.86.

Table 2.3: Effect Size for Mean Differences between 1st & 2nd Round Observations, Selected Parameters/All Provinces (N=46)

Parameter	Mean Difference	Average Standard Deviation	Effect Size
(1) Classroom Organization	+9%	15.5%	0.58
(2) Teaching & Learning	+15%	17.5%	0.86
(3) Development of Key Skills	+11%	14.5%	0.76
Grand Total	**+12%**	**14.5%**	**0.83**

2.2. Teacher Reported Perceptions of the New Methodology

Focus groups discussions with teachers generally indicated both acceptance and satisfaction with instructional methodologies targeted under SRP. Nearly all the teachers interviewed indicated that they had volunteered for teaching in the School Readiness Program and that they would do so again if the program is continued next year. Although teachers identified the time intensive nature of the new methodology as a potential problem, this common teacher response is an indication that they are at least using multiple activities to teach a single learning theme, as suggested during the training workshop. In the past, teachers stated that they would teach for 40 minutes and do perhaps one or two activities at most; under SRP, however, they needed to prepare about 4 activities every hour (e.g., letter recognition requires physical exercises, songs, games, etc.). In addition, teachers felt that learning tasks were more in keeping with the ability level of students (e.g., coloring in letters as opposed to writing them free hand) than was traditionally true when children studied from the Grade 1 textbook. On several occasions, many teachers reported that there was an especially big difference in learning social studies concepts because of the introduction of role plays, songs, and other activities. The use of colored pictures and teaching aids was also a tremendous stimulant to children's learning.

Teachers did observe, however, that the SRP curriculum does not fit the available time. The number of activities for each learning theme greatly slows down the rate of coverage of designated content. For example, most teachers said that they were only able to cover about 15 of the 24 letters prescribed in the SRP curriculum; similarly, teachers reported covering only the numbers 1-20 instead of 1-50 as indicated in the curriculum program. In addition, male teachers stated that they had difficulty with those activities that require singing and dancing. They requested the Ministry to supply cassette recorders and tapes to assist in singing. Teachers also reported that many folk tales are too long and do not have sufficient numbers of pictures; sometimes the words used are alien and unfamiliar (e.g., they use royal language).

Teachers generally indicated that children's learning was much better this year than was true in the past. Evidence of this could be seen in (1) improved attendance; (2) fewer incidences of children cry-

ing for their parents; (3) fewer children sleeping at their desks; and (4) greater assertiveness when participating in lessons. There were problems, however, especially at the beginning of the program. One of the biggest difficulties reported by teachers in managing their classrooms related to the discipline of children. For example, in Santok District (Kampong Thom Province), the children were often unruly with quarrels and fighting occurring between children over materials, holding marker pens, etc. To be sure, these same teachers reported a gradual improvement in discipline as the months wore on. The heavy focus on games and multiple activities at the same time was said to be very taxing and classroom observers noted on more than one occasion that classroom lessons would sometimes degenerate into total chaos with many incidences of fighting, quarreling, and crying.

As has been true of the Child Friendly School initiative in general, the issue of table types and sizes once again reared its ugly head during the implementation of SRP. In this respect, some teachers reported that it was difficult to conform with program guidelines to keep the center of the classroom free of furniture (for activities) with the presence of numerous large, clunky, wooden tables that are standard for Ministry classrooms. Child Friendly School classrooms were at a definite advantage because these rooms use fewer tables that are light and easy to move around. In addition, the tables are designed for groups of 6 to 8 children, unlike standard wooden desks that can only sit 2 or 3 children. There was a request from many teachers for the Ministry to consider the incompatibility between current furniture arrangements in standard classrooms and SRP guidelines. Indeed, the teachers in Steung Chanit School (Kampong Thom) had reportedly requested the school directors to remove the tables from the classroom entirely.

3. ASSESSMENT OF THE GENERAL IMPLEMENTATION PROCESS

The following assessment covers the implementation of capacity building activities, the usefulness of the curriculum, the monitoring process, general obstacles, and the attitude of parents and school directors towards the School Readiness Program. This information is based primarily on feedback from teachers during focus group discussions conducted in the last weeks of program implementation. In all, about 65 teachers participated in such discussions encompassing 30 primary schools.

3.1 Workshop Content and Delivery

Training workshops were held in 3 central sites for each of the 3 participating provinces. The workshops lasted 10 days and were designed to introduce teachers to the goals of the program, its methodology, and curriculum content. In general, the majority of teachers indicated their satisfaction with the workshop. With respect to content, teachers reported that while some of the content was old (particularly in language and mathematics), much was very new to them. This included a plethora of activity exercises, songs, dances, new teaching aids, and role-plays. Many teachers went so far as to say that the abundance of activities actually made the workshop "enjoyable," an unusual term to use for an official workshop. Teachers expressed surprise at the priority that was placed on teaching children to say and read letters as opposed to writing them; this is in contrast to the Grade 1 textbook, which has a major focus on writing – even in the early lessons. In any case, teachers stated that this heavy focus on speaking/reading skills in SRP made teaching much easier.

There seemed to be a consensus that theory in the workshop was more than balanced by concrete applications. Indeed, discussion respondents stated that about 70 to 80% of the workshop used a partici-

pant-centered methodology and that trainers got directly involved in helping the participants to make teaching aids. Workshop presentations were punctuated by numerous activities such as lesson demonstrations, teaching aid construction, and group work. Overall, teachers felt that there was extensive freedom for expressing opinions, which seemed different from other workshops that they had experienced.

Weak points in workshop delivery included the observation that there was too much content to be covered in the time available and this sometimes led to presentations of little depth. In addition, not all of the trainers were uniformly good and some seemed very unsure about the content to be taught. While teachers in Kampong Thom each received a Picture Book, a key curriculum document for teaching, teachers in Prey Veng and Kampong Cham complained that there were not enough of these books to go around at their workshop. Indeed, the Ministry provided only "one" book per district with the assurance that more would be delivered. In the event, these were never received. This later proved to be a major problem in program implementation. Similarly, materials for teaching aids were sometimes in short supply.

3.2. School Readiness Program Curriculum Documents

None of the teachers interviewed reported using the official Grade 1 textbook in any way during the 8-week readiness course; they instead relied entirely on the Teacher Handbook developed for the SRP. The experience of using a Teacher Handbook in this way was very different from teachers' earlier experience with curriculum documents. In this respect, teachers stated that they previously used to rely on the student textbook as the focal curriculum document and indeed taught directly from the book for each lesson. The Teacher Guide for the official curriculum often proved a secondary or even tertiary document for teachers. This contrasted with SRP where students had no textbook and teachers had to rely entirely on the Teacher Handbook as the engine for all lesson delivery. They used the prescribed games, teaching aids, and songs as a substitute for the textbook. Teaching in this way required considerably more thoughtfulness in preparation, classroom management, and content delivery. Surprisingly, teachers indicated that they were able to quickly adjust to this situation and found themselves not really missing the absence of a student textbook. To be sure, teachers indicated that they would like children to have a 'letter' coloring book so that though they do not write letters, they could have a bound portfolio of letter pages that they color in.

3.3. The Monitoring Process

Teachers in Kampong Thom and Kampong Cham Provinces reported being observed on average about 2 to 3 times during the 8-week period including observations from local observers, KAPE, UNICEF staff, and the Ministry. Some teachers such as those in Kampong Svay District reported being observed as many as 5 times. In Prey Veng Province, most teachers reported being observed about 3 times by local supervisors, not including summative observations by the Ministry and KAPE. Teachers in Ba Phnom District reported that they were observed more often and that these visits were described in somewhat more productive terms than was true of similar visits in Kampong Trabek District.

Teachers generally indicated that supervisors did not do superficial observations where they stood outside a window for 5 or 10 minutes and then moved on to the next classroom. Rather, the observations lasted the entire hour. Observers also tried to observe a protocol whereby they would often sit down in a classroom *before* the class began so as to make their presence as unobtrusive as possible. Observations were always followed by feedback sessions, which generally occurred during recess and lasted about 10 to 15 minutes. No teachers reported that feedback sessions occurred while children were still in the classroom. Most teachers stated that they did not feel intimidated by feedback sessions; indeed, the sessions were generally two-way in nature and were characterized by a combination of both positive and negative points. Some teachers reported receiving positive feedback to the extent of 70% of

all the comments given. Often-times, much of the conversation revolved around the lack of materials but local inspectors tended to refer this matter to the school directors (see below).

3.4. Obstacles in Program Implementation Reported by Teachers

Teachers across all 3 provinces stated that the major problems in implementing SRP from their perspective were (1) the large number of holidays in October and November, which tended to be disruptive to the program's momentum; (2) late registration of children (Kampong Thom only); (3) the resource intensive nature of activities in a resource-poor environment; (4) the cluttered character of classrooms due to heavy wooden furniture, which proved useless for the implementation of many prescribed activities; and (5) inadequate support from school directors. While the number of holidays and late registration were problems that were more or less out of the power of the program to control, the lack of materials is an issue that can be addressed in future years. Teachers reported that they had to rely entirely on materials purchased with PAP funds and that these were not commensurate to the need. Furthermore, most school directors were not aware of the resource-intensive nature of the program. As a result, they did not give much support in terms of making adequate allocations of the PAP funds that were available. As noted earlier, teachers in Prey Veng and Kampong Cham also complained in particular about the failure of the Ministry to provide program Picture Books, which were a major element in the School Readiness Program. This affected the ability of teachers to carry out their teaching because many of the lessons revolve around the use of specific pictures. More minor problems that were reported by teachers included the enrolment of underage children in SRP classes, particularly in Kampong Cham Province.

3.5. Parental Support of the Program

Teachers reported that parents were mixed in their viewpoints about the School Readiness Program. In this respect, a large minority of parents initially had many misconceptions about the program. Some parents were poorly disposed to a learning program that was not strongly focused on writing skills. This was particularly true among those whose children had already attended pre-school (about 10% by some teachers' estimates); these parents felt that SRP was repeating much of what their children had already learned. Some were also concerned about the lack of emphasis on book learning and what they felt was an overemphasis on games and songs. In other cases, parents felt confused that the SRP was really a conversion of Grade 1 classes to preschool education. Teachers and principals found it necessary to disseminate information about the program to enlist parental support. School personnel explained that the early emphasis on activities and games was intended to encourage children to come to school regularly as well to give them a positive feeling about studying; this would be followed by more structured study when the 8-week program was completed. To be sure, teachers reported that the vast majority of parents (especially those without pre-schools serving their communities) seemed to be in favor of the program and noted that their children professed greater interest in going to school regularly.

3.6. Support from the School

Teachers indicated that most directors lent support to program implementation in the preparation and selection of suitable classrooms that would prevent overcrowding. In other cases, some teachers reported that their directors had attended regular Thursday technical meetings and given input during these sessions. SRP teachers reported that they had regular Technical Day Meetings, and that these meetings afforded a good opportunity to make teaching aids. In most other respects, however, school directors were much less helpful. For example, they were not very receptive to teacher requests to photocopy pictures or provide stationery materials (marker pens, colored paper, etc.) because they did not understand the role of these materials in the program. In addition, directors did not call meetings to discuss the progress of the program or related problems. Teachers suggested that the Ministry should make some provisions to raise the awareness of directors about the methodology used in SRP so that they will be more supportive in the future.

4. CURRICULUM APPROPRIATENESS

4.1. Preliminary Considerations with respect to the Official Grade 1 Curriculum

The School Readiness Program is designed to provide suitable early learning experiences to Grade 1 pupils to ensure a sound base for future learning. One aspect to consider when evaluating the program is the extent to which it is compatible with the traditional curriculum. Before attempting this task, however, it is advised to first define what is meant by the term "curriculum" within the Cambodian context. The Ministry of Education Youth and Sport (MoEYS) produced the Primary Education Curriculum in 1996. Because it clearly outlines the competencies that pupils are expected to achieve for each subject by grade level, this document is usually referred to as the Core Curriculum. The Core Curriculum also includes a section outlining the amount of instruction time to be allocated to each subject area per week.

In practice however, when teachers talk about following the 'curriculum,' they are usually referring to the textbook for each subject. This perception is made complicated by the fact that the textbook and the formal Core Curriculum do not always follow each other closely. This is most evident in the conflicting recommendations regarding learning hours. Table 4.1 shows the results of research on learning hours carried out by the Planning Department in collaboration with the World Bank and CARE (McLaughlin, 1999). This research highlights the large discrepancies that exist between instructional hours proposed in the curriculum and the actual hours available for study in the school.

Table 4.1 Anomalies in recommendations on learning hours

Subject	Proposed Hours of Instruction in Core Curriculum	Proposed Hours in Teacher Guides	Actual Hours Available in the School Timetable
(1) Khmer	532	419	494
(2) Maths	90	142	190
(3) Science	76	30	38
(4) Social Studies	228	140	190
Total Hours	**926**	**731**	**912**

Source: Planning Dept., 1999

At the present time, the Core Curriculum is itself in a process of change with the imminent introduction of newly formulated national education standards and tests. These standards are expected to be completed early in 2005. Thus, in order to obtain a fair reflection of how the School Readiness Program fits into the Grade 1 curriculum as a whole, it should be compared with reference to the Core Curriculum, the textbooks, and at some later date, the emerging new education standards. This might best be done initially by considering the expected learning outcomes from the School Readiness Program and ascertaining their presence in the documents mentioned above. Such a comparative analysis can help determine to what extent the School Readiness Program prepares children to achieve the general competencies required nationally by Grade 1 pupils (both currently as well as when the new standards are introduced next year).

4.2 Comparative Content Analysis

The need for initial learning readiness is recognized in the textbook by a period of introduction to each subject at the start of the school year. The core curriculum also outlines the requirement for specific competencies in Pre-Reading and Maths Readiness. A recommended number of learning hours for these, however, is not specified and the exact amount of time taken for introduction varies according to each school. The content analysis undertaken in this assessment, therefore, focuses primarily on determining the level of compatibility between the SRP curriculum and the official curriculum by indicating whether there exist comparable learning competencies in each. The official curriculum in this

context is defined as the textbook and the Core Curriculum. The results of this analysis are summarized in Tables 4.2 (Khmer Language and Mathematics) and 4.3 (Social Studies, Science, and Motor Skills). In all, 23 competency areas were reviewed for the major subjects and 24 for minor subjects making for a total of 47 learning competencies that were distilled from the SRP curriculum. A reference is also given in each table, which indicates where in the textbook these learning competencies are best exemplified. An overview of the content analysis is given at the end of each table in the form of a 'compatibility index." This index simply summarizes in percentage form the number of areas of compatibility that were found with respect to the total number of learning competencies identified for the School Readiness Program.

Table 4.2: Comparative Content Analysis for Khmer Language and Mathematics

Lang	School Readiness Program	Compatibility to Text Book	Compatibility to Core Curriculum	Reference
Listening	(1) Identify sounds in environment	yes	yes	Lesson 2 (Khmer Lang)
	(2) Understand simple instructions	yes	yes	Lesson 1 (Khmer Lang & Soc Studies)
	(3) Recognize sounds of alphabet	yes	yes	Lesson 1 (Khmer Lang)
	(4) Make simple words by understanding the sounds	yes	yes	Lesson 1 (Khmer Lang)
Speaking	(5) Give verbal information about self	yes	yes	Lesson 2 (Soc Studies)/Lessons 2, 3, 4 (Khmer Lang)
	(6) Give verbal information about simple family relationships.	yes	yes	Lesson 5 (Soc Studies)
	(7) Talk about animals & their babies	yes	yes	Part 1, Lesson 2 (Science)
	(8) Talk freely and with confidence	yes	yes	Lessons to encourage speaking in every lesson of Khmer Lang
Reading	(9) Identify simple shapes and classify them	yes	yes	Lesson 3 (Khmer Lang)
Writing	(10) Able to make simple words by understanding the sounds	yes	yes	Lesson 3 (Khmer Lang)
Concept of Size	(11) Understand big & small, fat & thin, tall & short	yes	yes	Begins Lesson 3 (Khmer Language)
	(12) Understand bigger/smaller than	yes	yes	Begins Lesson 3 (Maths)
	(13) Concept of sequencing	yes	yes	Begins Lesson 5 (Khmer Language)
	(14) Know about part and whole	yes	yes	Begins lesson 3 (Khmer Language)
	(15) Understand before and after	yes	yes	Chapter 3 Khmer Language
Math	**School Readiness Program**	**Compatibility to Text Book**	**Compatibility to Core Curriculum**	**Reference**
Numbers	(16) Repeat and identify the numbers 1 – 5 (Week 3)	yes	yes	Lesson 2 (Math)
	(17) Numbers 6 – 10 (Week 4)	yes	yes	Lesson 5 (Math)
	(18) Numbers 10- 15 (Week 5)	yes	yes	Lesson 8 (Math)
	(19) Numbers 15 – 20 (Week 6)	yes	yes	Lesson 14 (Math)
	(20) Numbers 20 – 30 (Week 7)	yes	yes	Lesson 14 (Math)
	(21) Numbers 30 – 50 (Week 8)	yes	yes	Lesson 14 (Math)
	(22) Read the hours of the clock	yes	Not Specified	Lesson 15 (Math)
	(23) Identify and match objects & numbers	yes	yes	Begins Lesson 1 (Math)

	ANALYSIS SUMMARY			
No	**Competency Area**	**Compatibility Index for Textbook**	**Compatibility Index for Core Curriculum**	**Remarks**
(1)	Language	100%	100%	High Compatibility
(2)	Mathematics	100%	88%	High Compatibility
(3)	Major Subjects	100%	96%	High Compatibility

Source: Pedagogical Research Dept, 1996-2003; Early Childhood Education Dept (SRP Curriculum), 2004.

Table 4.3: Comparative Content Analysis for Minor Subjects/Skill Areas

Social Studies	**School Readiness Program**	**Compatibility to Text Book**	**Compatibility to Core Curriculum**	**Reference**
Hygiene	(1) Can understand the importance of personal hygiene	yes	yes	Begins Part 2 (Science) & Chapter 3 lesson 5 (Khmer Language)
Home & Community	(2) Understand the concept of relationships within the family	yes	yes	Begins Chapter 2 (Khmer Language)
	(3) Know about festivals, what is celebrated & what is eaten	yes	yes	Chapter 5 lesson 2 (Khmer Language) & towards the end of the Social Studies book
	(4) Learn about the types of jobs people do in the community	yes	yes	Begins Chapter 5 Lesson 1 (Khmer Language)
Time & Space	(5) Know about the days of the week	yes	yes	Lesson 24 (Social Studies)
	(6) Understand far & near	yes	Not Specified	Could be introduced lesson 13 (Social Studies)
	(7) Understand the concept of before and after	yes	yes	Begins Chapter 1 (Khmer Language)
Science	**School Readiness Program**	**Compatibility to Text Book**	**Compatibility to Core Curriculum**	**Reference**
Plants	(8) Recognize the value of trees growing in the environment	yes	yes	Begins Part 1 (Science) Living & non living Nature
	(9) Know about seasons, fruits and vegetables	yes	yes	Begins as above but is also found in Social Studies and Khmer Language
Animal	(10) Recognize animals and their babies	yes	yes	Begins Part 1 (Science)
Color	(11) Understand the concept of color.	yes	yes	Begins Chapter 1 Lesson 2 (Khmer Language)
Motor Skills	**School Readiness Program**	**Compatibility to Text Book**	**Compatibility to Core Curriculum**	**Reference**
Fine Motor	(12) Paper cutting & tearing	yes	yes	Art Education. Cut & stick folding paper
	(13) Drawing family members	Not Specified	Not Specified	--
	(14) Handling seeds & stones	Not Specified	Not Specified	--
	(15) Drawing patterns	yes	yes	Social Studies: How to draw
	(16) Work with beads, paper pieces, and sticks	Not Specified	Not Specified	--
	(17) Work with clay	Not Specified	Not Specified	--
	(18) Joining dotted lines together	yes	yes	Focus on joining lines & dots to make letters. (Khmer Language & Social Studies)
	(19) Matching shapes & colors	yes	yes	(Math & Khmer Language)

Gross Motor	(20) Rhythm & movement	yes	yes	(Social Studies). Traditional dance movements
	(21) Team games	Not Specified	Not Specified	--
	(22) Action songs & games	yes	yes	Sing National Anthem & traditional songs
	(23) Walk on shapes drawn on the floor	yes	yes	Understand & use basic shapes
	(24) Daily exercise	Not Specified	Not Specified	--
ANALYSIS SUMMARY				
No	**Competency Area**	**Compatibility Index for Textbook**	**Compatibility Index for Core Curriculum**	**Remarks**
(1)	Science	100%	88%	High Compatibility
(2)	Social Studies	100%	100%	High Compatibility
(3)	Motor Skills	54%	54%	Low Moderate Compatibility
(4)	Minor Subjects	75%	71%	High Moderate Compatibility

Source: Pedagogical Research Dept, 1996-2003; Early Childhood Education Dept (SRP Curriculum), 2004.

4.3. Overall Assessment of Curricular Compatibility

The above tables suggest that the School Readiness Program is generally both compatible and complementary to the existing mainstream curriculum. This is particularly true of the major subjects of Language and Mathematics as well as minor subjects in Science and Social Studies where in nearly all cases compatibility indices were very high. This is not to say that SRP and the official curriculum are nearly identical. As noted earlier, the SRP consciously avoids many official curriculum competencies that are presented nearly immediately with the opening of schools. The most conspicuous example in this regard is "writing." The reason for these omissions is that the presentation of many of these competencies so early in the year is thought to be premature and leads to learning difficulties (and high repetition rates) later on. This difference notwithstanding, the present analysis helps to emphasize that SRP curricular content does not contradict the official curriculum and as suggested above, provides a useful introduction to many of the content areas that children will later encounter in the textbook.

The high level of comparability between the SRP and official curriculum is less true in the area of motor skills where the former has a much stronger focus on both fine and gross motor skills. To be sure, however, compatibility indices with the official curriculum are still moderately high. Compatibility indices in this respect were 54% for both the textbook and the Core Curriculum. This key element of the SRP curriculum provides continuity with experimentation in nontraditional pedagogical approaches that have been current in Cambodia for several years. This refers in particular to recent education initiatives that have tried to address teaching deficiencies in the formal educational system by developing pedagogical approaches which stress psychomotor styles of learning (e.g., Save the Children/Norway). This stands in contrast to traditional academic methods involving verbal and visual abstractions (cf. Ratnaike, 1999). The rationale underlying these approaches relates to the way that children in rural areas tend to learn and in particular the primacy of psychomotor-based learning modes as opposed to abstract, picto-verbal ones that have such prominence in textbooks. The strong curricular focus on the development of fine and gross motor skills in SRP is, therefore, a unique program feature that is highly suited to children in rural areas and surely helps to facilitate later learning.

In conclusion, it can be said that the School Readiness Program does appear to be generally compatible with the mainstream curriculum, particularly for the major subjects of Language and Mathematics. There are no areas of major contradiction with respect to academic content. There are important differences between the two curricula, however, in pacing the presentation of content to be sensitive to the learning needs of rural children, as well as a highly rationalized pairing of sound pedagogical practice to the presentation of content. This speaks in particular to the conveyance of curricular content through activity-based approaches that have a strong emphasis of fine and gross motor skills.

5. LEARNING ACHIEVEMENT

5.1. Overview of Inquiries Undertaken

The present section examines the results of student testing that was undertaken in 20 primary schools to assess the effect of the School Readiness Program against a baseline. In all, 931 children were tested in two conditions: those who had studied with teachers who had been trained in SRP (experimental condition) and those who had not (control condition). Testing took the form of one-on-one interviews that lasted about 15 minutes. Pre- and post-tests were administered in both conditions and terminal scores compared accordingly. Within group analyses used a *t test* for paired sample construction and between group comparisons used a *t test* for samples of unequal variance.

This review of learning achievement not only includes an examination of terminal scores in relation to a baseline but also the nature of the baseline itself; that is, to what extent children are already proficient in certain competency areas. Such information will be highly useful in making revisions to the SRP curriculum so that unnecessary competencies can be eliminated, particularly in so much as teachers have observed that the present curricula already exceeds the time available for instruction. This section also seeks to clarify the role of other selected factors in learning such as enrolment status, pre-school background, sex, and age in the context of SRP. This particular aspect of the assessment has relied primarily on bi-variate correlation analyses and significance testing of mean differences.

5.2. Comparison of Terminal Scores & Mean Differences for Experimental and Control Groups

A comprehensive presentation of pre- and post-test scores for all competency areas and subjects is provided in Table 5.1 below. Mean scores are provided both for discrete competencies (of which there are 17 in all) as well as broad competency areas as follows: (i) Spatial/Mathematical Concepts; (ii) Verbal Ability; (iii) Pseudo-scientific Concepts (Science); and (iv) Social and Cultural Awareness (Social Studies). Overall, children in the experimental condition had a higher terminal (i.e., post-test) Total Test score than was true of the control condition (53% versus 38%) as well as a larger mean difference between pre-test and post-test mean scores. That is, children studying in SRP exhibited greater change in their learning (an improvement of 25% from a baseline of 28%) than was true of the control group who only exhibited an improvement of 15% from a baseline of 23%. Interestingly, experimental and control groups exhibited a total pre-test score that was about the same, indicating that both groups started from approximately the same place in terms of beginning proficiencies.

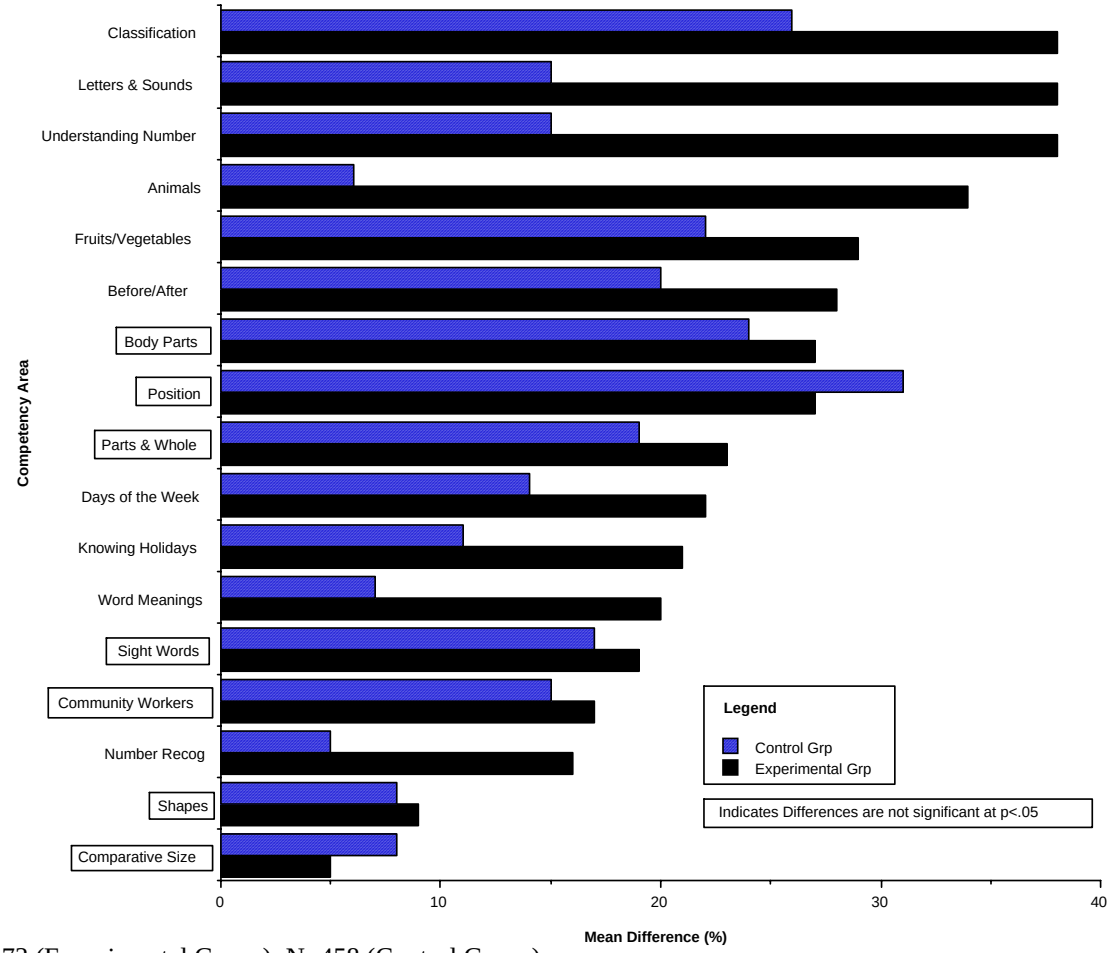
The difference between mean differences from pre- and post-test conditions were higher in 15 out of 17 competency areas (or 88% of all competencies) in favor of the experimental group though these differences were only significant at $p<.05$ in 10 cases (59% of the competencies tested). In the 2 cases where the control group exhibited a mean difference that was greater than that of the experimental group, they were all statistically non-significant. Competency areas that showed the greatest improvement from a baseline (for the experimental group) included Classification (+38%), Letters and Sounds (+38%), Understanding Numbers (+38%), and Animals (+34%). This trend is illustrated very clearly in Figure 5.1. Competency areas that showed the least improvement among those in the experimental group (though not necessarily the lowest absolute scores) included Comparative Size (+5%), Shapes (+9%), and Number Recognition (+16%).

Table 5.1: Summary of Pre and Post-Test Results by Competency Area and Condition

No	Competency Area	Experimental Group			Control Group			Mean Diff. betw grps are significantly different at p<.05
		Pre-Test	Post-Test	Mean Difference	Pre-Test	Post-Test	Mean Difference	
I	**Spatial/Mathematical Concepts**	**33%**	**59%**	**+26%**	**27%**	**41%**	**+14%**	**Yes**
1	Shapes: circles, squares, triangles, rectangles	25%	34%	+9%	26%	34%	+8%	No
2	Comparative Size: big, small, height, length, more-less	83%	88%	+5%	80%	88%	+8%	No
3	Position: near, far, on top of, below	42%	69%	+27%	31%	62%	+31%	No
4	Number recognition: 1-50	4%	20%	+16%	3%	8%	+5%	Yes
5	Understanding of Number: matching numerals and amounts (1-20)	8%	46%	+38%	17%	22%	+15%	Yes
6	Parts and whole: completing puzzles, differentiating parts from whole	36%	59%	+23%	30%	49%	+19%	No
7	Before/After: answering questions on a sequence	14%	42%	+28%	9%	29%	+20%	Yes
II	**Verbal Ability**	**8%**	**38%**	**+30%**	**6%**	**20%**	**+14%**	**Yes**
8	Letters and Sounds: letter recognition, pairing sounds to letters	10%	48%	+38%	8%	23%	+15%	Yes
9	Sight word recognition:	5%	24%	+19%	3%	20%	+17%	No
10	Word meanings: matching words to pictures	5%	25%	+20%	8%	15%	+7%	Yes
III	**Pseudo-scientific Concepts**	**40%**	**70%**	**+30%**	**34%**	**55%**	**+21%**	**Yes**
11	Classification of Vehicles: by water, air, land	33%	71%	+38%	30%	56%	+26%	Yes
12	Animals: names, differentiating adults & babies	26%	60%	+34%	47%	53%	+6%	Yes
13	Fruits/Vegetables: classify by kind/color	47%	76%	+29%	40%	62%	+22%	Yes
14	Body parts: naming and pointing	32%	59%	+27%	24%	48%	+24%	No
IV	**Social and Cultural Awareness**	**33%**	**56%**	**+23%**	**27%**	**41%**	**+14%**	**Yes**
15	Knowing Holidays: picture classification	31%	52%	+21%	29%	40%	+11%	Yes
16	Days of the Week: names, relative positions of days	23%	45%	+22%	14%	28%	+14%	Yes
17	Community Workers: pairing names to pictures	51%	68%	+17%	48%	63%	+15%	No
TOTAL		**28%**	**53%**	**+25%**	**23%**	**38%**	**+15%**	**Yes**

N=473 (Experimental Group); N=458 (Control Group)

Figure 5.1: Comparison of Mean Differences between Pre-and Post-Test Scores by Competency and Condition



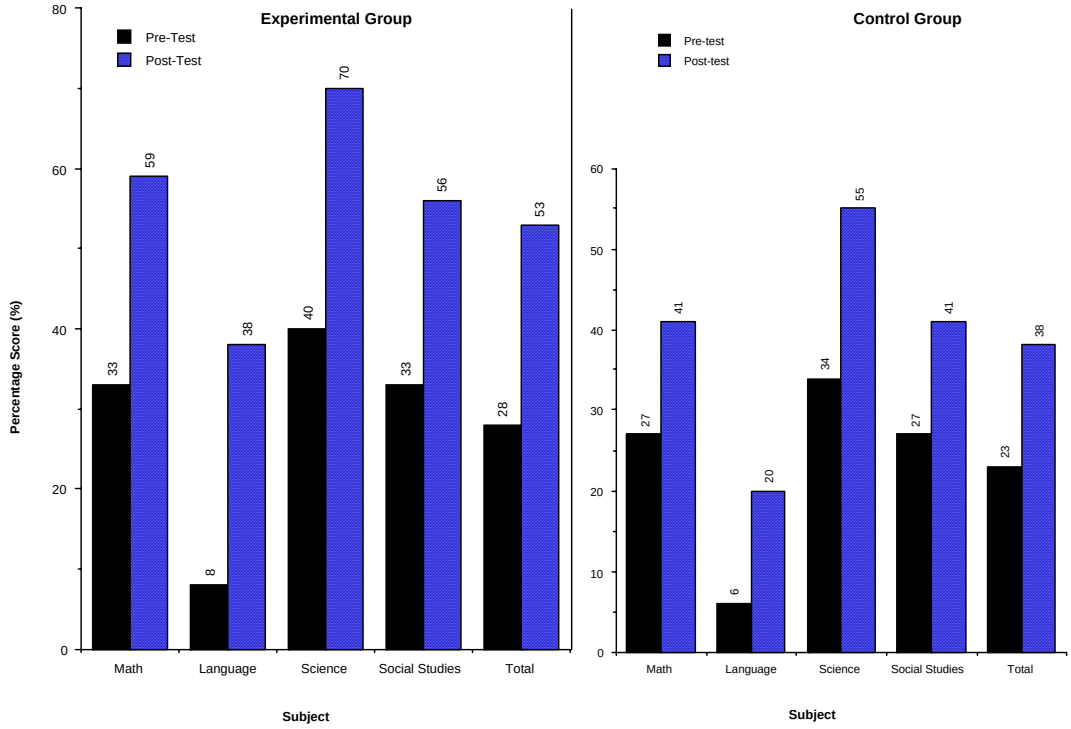
N=473 (Experimental Group); N=458 (Control Group)

Certain competency areas exhibited extremely high scoring even in pre-test conditions. These results suggest the need for appropriate revisions in the SRP curriculum (see pre-test scores in Table 5.1). That is, children may already have achieved these competencies even before starting school. These high scoring pre-test areas include Comparative Size (Exper Grp: 83% / Control Grp: 80%); Community Workers (51% / 48%); Fruits and Vegetables (47% / 40%) and Position (42% / 31%). It should be noted too that these questions were characterized by high scoring even during field-testing of items as well but were retained because they were an integral part of the SRP curriculum.

Aggregate scores for discrete subject areas showed the same scoring advantage for the experimental group as that discussed above. Once again, the experimental group evidenced higher terminal scores across all subjects that were significantly different from baseline scores ($p<.05$). And although both groups showed considerable (and therefore statistically significant) differences from pre-test to post-test scores across all subjects, these differences were far greater for the experimental group. This can be seen very clearly in Figure 5.2. For children in the experimental group, the greatest mean difference between pre- and post-test occurred in Language and Science (+30% in both cases); for the control group, Science exhibited the greatest mean difference (21%). In terms of absolute scores, however, children in both the experimental and control group performed best in Science where the terminal score was 70% and 55%, respectively. The lowest terminal scores occurred in Language for both groups. In this respect, children in the experimental condition attained a terminal score of only 38%

and for control group children, only 20%. Although this outcome should not obscure the fact that children in SRP showed the greatest improvement in Language as noted above, the rock bottom character of pre-test scores (8% for the experimental group and 6% for the control group) and the relatively lower terminal scores for both groups suggest that any adjustments in the SRP curricula or content delivery should focus on acquisition of language competencies.

Figure 5.2: Comparison of Mean Scores by Subject and Condition



N=473 (Experimental Group); N=458 (Control Group)

It is appropriate to conclude this subsection with a discussion of the effect size for SRP interventions for individual subject areas and Total Test score. Effect sizes in this context are somewhat difficult to estimate because they require calculating the difference between the mean differences for pre and post test scores of both conditions as well as utilizing the standard deviations of 4 distributions (i.e., pre/post-test distributions x 2 groups). In spite of these difficulties, effect sizes are a useful tool to assess program impact in this regard because they help to compensate for the improvements in children's learning that would have occurred any way from natural maturation factors and instruction under the official curriculum (i.e., the changes represented by learning increments for the control group). The assumption in this respect is that any additional improvements registered by the experimental group over and above that attained by the control group is due to the program intervention. The 'difference between the differences' calculated in this way is, therefore, the rough value of the impact achieved. In order to assess the magnitude of this impact, the effect size formula asks that one compare the impact value to the average standard deviation of the relevant score distributions of which there are 4 in this case. Table 5.2 helps to summarize how these calculations were done and present the resulting effect sizes accordingly.

The reader will recall that effect sizes over 0.80 are considered major, those over 0.50 are moderate, and those that are 0.20 or less are considered minor. According to these interpretive guidelines, SRP appears to have had the most impact in Mathematics and Language where the effect sizes were 0.71

and 0.70, respectively. This would be considered a high moderate impact. Impacts in Science and Social Studies tended to be in the low moderate range whereas the total test score effect size for all subjects suggests a moderate impact (0.56). These findings such as they are constitute a reasonably strong endorsement for the School Readiness Program and its potential in the future.

Table 5.2: Effect Size for Cross Group Comparisons by Subject

Subject Area	Experimental		Control		Cross Group Comparisons	
	Mean Difference (A)	Pre/Post-test Stand Dev (B1/B2)	Mean Difference (C)	Pre/Post-test Stand Dev (D1/D2)	Diff betw Mean Differences (A-C) =E	Effect Size E/[(B1+B2+ D1+D2)/4]
(1) Mathematics	+26%	15/21%	+14%	13/19%	12%	0.71
(2) Language	+30%	18/31%	+14%	14/29%	16%	0.70
(3) Science	+30%	28/26%	+21%	27/31%	9%	0.32
(4) Social Studies	+23%	24/27%	+14%	19/27%	9%	0.38
Total Test Score	**+25%**	**15/24%**	**+15%**	**13/21%**	**10%**	**0.56**

N=473 (Experimental Group); N=458 (Control Group)

5.3. Enrolment Status, Pre-school Background, & Ascribed Characteristics

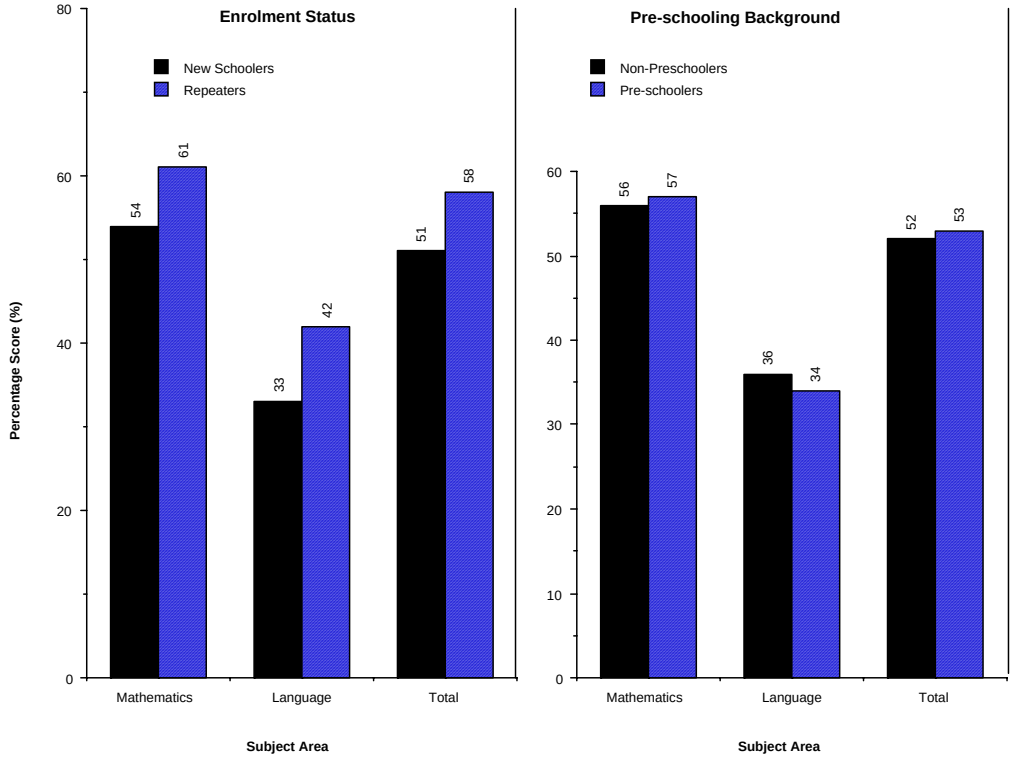
This subsection describes differential test performance for a number of student subgroups within each learning condition. Sub-groupings in this context are defined by enrolment status (repeaters and new schoolers), pre-school background, and ascribed characteristics such as sex and age.

Repeaters and New Schoolers: In one sense, the results of a comparison of learning achievement levels between repeaters and new schoolers are highly intuitive; that is, one would expect that repeaters would perform better. It is, therefore, not surprising that children enrolled in SRP who were repeating the year attained significantly higher total test scores overall when compared to new schoolers (58% versus 51%). This was equally true in Mathematics and Language (see Figure 5.3 and Table 5.3). In this respect, the greatest mean difference occurred for Language where an improvement of +9% occurred from the baseline score. Mean differences between the baseline and terminal score for Mathematics and the Total Score were each +7%. All differences in this context were statistically significant at $p<.05$. The importance of these results is dramatized by comparisons with the control group. As shown in Table 5.3, repeaters in the control condition only attained significantly better post-test scores in the case of Mathematics. Total Test and Language scores were not significantly better than those attained by new schoolers. In addition, a comparison of mean scores for repeaters between test conditions illustrates very large differences in achievement. For example, repeaters in the experimental condition outperformed repeaters in the control condition by a margin of 19% for Mathematics (62% versus 42%) and by a margin of 18% for Language (42% versus 24%). These are impressive margins and strongly suggest that SRP had a major impact on facilitating learning among repeaters.

Non-preschoolers and Pre-schoolers: In the case of pre-school background, a somewhat different situation prevailed from that recounted above. Although children in SRP classrooms who had previously studied in pre-school attained a higher terminal total score than non-preschoolers (53% versus 52%), the difference was not statistically significant at $p<.05$. Differences for the major subjects were also slight and in any case were not significant. One interesting qualification of these results, however, concerns similar subgroup comparisons within the Control Group. In this context, children with pre-school backgrounds performed significantly better than those who had not been in pre-school across the board (see Table 5.3). These results were confirmed by correlation analyses for pre-school background and total post-test scores where a statistically significant coefficient of 0.21 was attained (see Table 5.4). These findings suggest that children with pre-school backgrounds who study in non-

intervention classrooms with the regular core curriculum have a decided learning advantage. But because SRP interventions share a great deal with pre-school curricula, children with a pre-school experience studying in this context lose their learning advantage, resulting in performance scores that are comparable with those children who have not had the benefit of being in pre-school.

Figure 5.3: Post-Test Mean Scores by Enrolment Status and Pre-school Background (Experimental Group Only)



Note: New Schoolers: N=323; Repeaters: N=137; Non-preschoolers: N=314; Pre-schoolers: N=151

Table 5.3: Subgroup Comparisons of Mean Scores and Significance Levels by Condition and Subject

Student Category	EXPERIMENTAL GROUP					
	Total Test Score		Mathematics		Language	
	Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
New Schoolers	25%	51%	31%	54%	5%	33%
Repeaters	34%	58%	39%	61%	14%	42%
Significant (p<.05)	Yes	Yes	Yes	Yes	Yes	Yes
Non-preschoolers	28%	52%	33%	56%	9%	36%
Pre-schoolers	27%	53%	33%	57%	5%	34%
Significant (p<.05)	No	No	No	No	Yes	No
	CONTROL GROUP					
New Schoolers	21%	37%	26%	41%	5%	18%
Repeaters	27%	41%	31%	42%	9%	24%
Significant (p<.05)	Yes	No	Yes	No	Yes	Yes
Non-preschoolers	20%	36%	25%	39%	4%	18%
Pre-schoolers	30%	45%	33%	48%	12%	26%
Significant (p<.05)	Yes	Yes	Yes	Yes	Yes	Yes

Exper Grp: New Schoolers: N=323; Repeaters: N=137; Non-preschoolers: N=314; Pre-schoolers: N=151
Control Grp: New Schoolers: N=314; Repeaters: N=139; Non-preschoolers: N=323; Pre-schoolers: N=133

Ascribed Characteristics: Analyses of differential test performance with respect to children's sex did not yield any compelling differences. Correlation coefficients were generally not statistically significant, except in the case of pre-test scores for the experimental group (see Table 5.4). Although the resulting coefficient of –0.12 indicated a significant performance advantage for boys, the relationship was extremely slight. In contrast, age demonstrated a moderately strong relationship with test performance across all conditions. That is, older children tended to outperform younger children in both the experimental and control groups. Resulting coefficients in this respect ranged from 0.25 to 0.36. The uniformity across testing conditions, however, does not suggest any particular advantage or disadvantage for older children vis a vis their participation in SRP.

Table 5.4: Correlation Coefficients for Total Test Score and Student Background Characteristics

Parameter	Experimental Group				Control Group			
	Pre-Test	Significant at p<.05	Post-Test	Significant at p<.05	Pre-Test	Significant at p<.05	Post-Test	Significant at p<.05
Sex	-0.12	Yes	-0.03	No	-0.07	No	-0.06	No
Age	0.33	Yes	0.25	Yes	0.36	Yes	0.25	Yes
Enrolment Status	0.26	Yes	0.13	Yes	0.20	Yes	0.07	No
Pre-school Background	-0.05	No	0.02	No	0.34	Yes	0.21	Yes

N=473 (Experimental Group); N=458 (Control Group)

5.4. Discussion of Test Results

The overriding thrust of the findings presented above is that the School Readiness Program has had an unmistakable impact on children's learning over and above what might naturally occur through mental maturation processes or the regular learning routine in school. Not only are children in SRP classrooms outperforming children from schools with comparable class sizes and demographic backgrounds but the magnitude of the impact appears to be not slight but major, particularly in core subjects such as Language and Mathematics. These findings help to validate teacher observations that children are indeed learning better. Test findings also demonstrate both that the greatest improvement in student learning occurred in Language but also that Language is the area where children are weakest when they begin school. On the other hand, some competency areas that are currently taught under SRP are not weak when children begin school and that the time spent on these competencies might better be used in alternative instruction, such as Language competencies. Illustrative competency skills in the SRP curriculum that may be redundant include Comparative Size and Knowledge of Community Workers.

Although SRP does not generally appear to have any special effect on child subgroups such as girls or older children, it does seem to facilitate rapid progress among children who are repeating the school year. Test results indicated that repeaters in SRP outperformed repeaters who were learning in regular Grade 1 classrooms. These results may have implications for the way in which the Ministry conducts remedial classes at Grade 1 level in the future. In addition, while children with pre-school backgrounds do not appear to have any special learning advantage in SRP classrooms, there may be a hidden meaning to these findings. Another of way of saying this is that the failure of pre-schoolers to

demonstrate any learning advantage over non-preschoolers in the experimental learning condition may suggest that SRP helps to level the playing field for the latter. These results were in contrast to control condition classrooms where children with pre-school backgrounds demonstrated a very significant learning advantage over their peers who had not previously been afforded access to a pre-school. Given the severe under-resourcing of ECCD networks in Cambodia, SRP's seeming ability to compensate for a lack of pre-schooling may offer a means to mitigate this problem.

As in any testing activity, the above findings should be considered in the context of unavoidable constraints. For example, program evaluators discovered too late that teachers had not covered a significant portion of the SRP curriculum. Teacher focus groups discussions in this regard indicated that they had only covered about half the numbers that should have been taught and a large number of letter sounds. This may have compromised the content validity of testing instruments that were based on the assumption that most of the assigned content would be covered during the 8-week course. This fact may partly explain Language test scores that were relatively lower than other subjects. Another constraint that should be considered is that testing instruments were based on a curriculum program taught to experimental condition children but not to children in regular classrooms. This may have given children in SRP classrooms a slight to moderate advantage when taking tests. Nevertheless, this constraint should be balanced against content analyses discussed in Section 4 that indicate a high degree of compatibility between the SRP curriculum and the official curriculum used in Grade 1 classrooms.

6. REPORT CONCLUSIONS

The School Readiness Program is based on the premise of helping teachers to understand how young children learn. It encourages them to use a range of activities, which support pupils' personal and physical development. Alongside this philosophy, the program explains the necessity of creating an atmosphere of participation, inclusion, trust, fun and positive encouragement. This helps to create an environment, which builds self-confidence in the learner. Teachers are shown how to share responsibility with pupils for their learning. These approaches can result in the creation of a productive learning environment where children acquire the basic skills needed for the development of critical and creative thinking as well as lifelong learning. Because SRP has helped to move the above philosophy to actual practice, it has constituted a major leap forward for education in Cambodia.

This review has sought to investigate the degree to which potential problems might undermine the School Readiness Program and compromise its attractiveness as a means to address repetition rates at Grade 1 that have been entrenched for several years. These problems refer to poor workshop development and delivery for training of teachers, failure of teachers to put training concepts into practice, inadequate support from parents and schools, unresponsive monitoring systems, incompatibility with the official Grade 1 curriculum, and above all, a failure to demonstrate real improvements in children's learning. For the most part, none of these problems materialized on the scale feared. Not only did teachers indicate that workshop delivery was highly participant-centered but summative teacher evaluations indicated that about three-fourths of observed teachers demonstrated change in teaching practice from a baseline. In addition, teacher feedback indicated that district and province-based teacher supervision systems were active and that teachers had been observed at least 3 to 5 times during program implementation. In contrast to usual practice, teachers did not report that these visits were of the 'check and control' variety but were sensitized to sound pedagogical practice.

A content analysis of the SRP curriculum also revealed that it is highly compatible with the official curriculum. To be sure, however, SRP is distinguished from the official curriculum by a much stronger focus on the development of motor skills. In this sense, the SRP curriculum espouses a psycho-motor style of learning that is highly conducive to the way that many rural children learn. This difference, however, should be construed as a complementary rather than a contradictory point of contrast. In-

deed, this curricular feature of SRP shows that it is highly sensitized to local learning needs and stands in contrast to picto-verbal learning modes that are prominent in textbooks.

The crown of roses in this review, however, would appear to be the empirical evidence that it provides, which suggests the School Readiness Program does result in improved learning in comparison to a control group with similar socio-economic and demographic background. Across all subject areas, impacts on learning were found to be moderate to major, particularly in the core subjects of Mathematics and Language. In addition, test results also suggest that SRP is especially beneficial to repeaters and that it offers possibilities to enhance access to pre-school education practices and re-think the way in which schools conduct remediation.

This review, however, did find some major problems that need to be addressed if SRP is to maintain its successful momentum. One of these concerns the scope of the current curriculum, which seems to exceed the time frame available for adequate coverage. To a large extent, this problem arises from the fact that SRP implementation occurs at the beginning of the school year when there are many holidays that disrupt the program's momentum. In addition, the school registration process is often late and also cuts into school days early in October further undermining the enrolment stability in classrooms. Many children are, therefore, still joining classes in mid-October as a result of registration procedures that are often behind schedule. Nevertheless, the SRP curriculum can be better streamlined by eliminating lessons that cover redundant material as indicated by pre-test results. Relatedly, the Ministry needs to review its procedures for the production and dissemination curriculum documents for teachers. In this respect, a large number of teachers never received key resource materials following the conclusion of teacher workshops.

Another major potential problem to be considered relates to the attitude of parents and school directors towards the program. Although teachers reported that most parents had endorsed the School Readiness Program, there was a sizable minority of those who were skeptical of its short shrift of formal book learning. This highlights a possible need for formalized campaigns to win greater parental support for the program. Similarly, it may be necessary to provide formalized orientations for school directors to enhance their support of SRP. In this respect, teachers noted that SRP is highly resource intensive and that the materials provided from PAP funds by school directors were not adequate to the need.

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