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THE IMPACT OF FORMAL EARLY CHILDHOOD CARE AND EDUCATION ON THE COGNITIVE DEVELOPMENT AND ACADEMIC POTENTIAL OF CHILDREN IN MADAGASCAR: A LITERATURE REVIEW

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Abstract

In Madagascar, formal systems of Early Childhood Care and Education (ECCE) are in the early stages of development, mostly as a result of international declarations and efforts of non-governmental organizations, drawing mostly from research findings of studies in developed countries. Reviewing research that investigates the impact of ECCE on cognitive development and school readiness among children in Madagascar provides a critical source of information for national policy makers, international actors and donors interested in fostering optimal child development. In the first part, we provide a brief overview of the global reviews on early childhood development (ECD) research because they provide the context for understanding the universal valuing of formal pre-primary education. Because studies from African countries are lacking in international literature, we have considered relevant a research on sub-Saharan African countries. These countries share some cultural, colonization and poverty aspects with Madagascar. We have presented this research in the second part of our paper. In the third part, we review research findings on ECCE and ECD, specifically in Madagascar. In the fourth and final section, based on the literature reviewed, we draw conclusions and offer suggestions for future research on pre-primary education in Madagascar.

Key words*:* academic potential, cognitive development, Early Childhood Care and Education, review research

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1. Introduction

In Madagascar, formal systems of Early Childhood Care and Education (ECCE) are in the early stages of development, mostly as a result of international declarations and efforts of non-governmental organizations. An international framework for economic and social development, sponsored by the United Nations Development Programmeme, UNICEF, World Bank, and UNESCO, among other development agencies, specifies eight "Millennium Development Goals" (MDGs) and six "Education for All" (EFA) goals to eradicate poverty by 2015. The first EFA goal is "Expanding and improving comprehensive early childhood care and education". In achieving this EFA goal, non-governmental organizations (NGOs) are major players, particularly in contexts where governments are struggling to financially support public education, such as in the case of Madagascar, where UNICEF and Aide et Action International (AEAI), among other organizations, are engaged in educational interventions. For example, after several cyclones destroyed over 100 and damaged nearly 600 schools in Madagascar, UNICEF contributed to building 90 schools and training 700 teachers (anonymous, 2007). In places where pre-primary formal education has a longer history, research findings are critically important for informing educational policies, programmeme design, educator practices, and family involvement. According to international literature, the impact of early human development programmemes and services on early childhood development (ECD) varies across contexts, depending upon the training of care providers and the child-to-staff ratio (Karoly, Kilbourn, & Cannon, 2005). Consequently, research that investigates the impact of ECCE on cognitive development and school readiness among children in Madagascar provides a critical source of information for national policy makers, international actors and donors interested in fostering optimal child development, so much so that some donors attach requirements for research to programmeme funding.

A current example of funding being dedicated to both programmeme and research activities comes from a case study in which we are currently engaged. We are university-based researchers working in collaboration with an international donor (who requests anonymity) and an international actor, AEAI. Together, we are engaged in researching the impact of an ECE project in Madagascar on children's development. (This example is not unique in that many sources of programme funding in North America dedicate a portion of the funding to research; it is used here because it is specific to the case of Madagascar.) Here is a brief background of AEAI and its involvement in ECE. The organization was established in 2007 and has a history dating back to 1981 when the British NGO ActionAid was established in France and launched child sponsorship

programmes in India and Kenya (accessed November 25, 2011 http://www.aide-et-action.org/index.php). Aide et Action International is currently working in 22 countries with over 100 educational projects. In 2010, AEAI adopted an agreement among a group of donors for an EFA plan and, as a complement, sought and received funding specifically for fostering the development of ECE in Madagascar with a project that began January 2011 and ran through December 2013. Although AEAI focuses mostly on educational efforts other than ECE, as evidenced by the fact that only 7 of its 109 global interventions are on this topic, it has had recognition and partnership with the State and local authorities in Madagascar since 1991. The organization's efforts in Madagascar are designed to reach 7,000 children and families as well as educators and other actors in the education sector in 20 communes, with a priority on serving rural and suburban areas. The donation that funded this ECE initiative in Madagascar requires AEAI to collaborate with an independent team of researchers to conduct scientifically rigorous studies on child development outcomes because most of the belief in pre-schooling comes from studies conducted in developed countries and the context of Madagascar differs greatly.

A majority of the children in Madagascar live in the conditions of an unstable government, extreme poverty and limited access to education, though this has not always been the case. At the end of the 1970s, the country still enjoyed a comparative advantage in education compared to other African countries, as a result of a long historical tradition in favour of formal schooling. Then, during the 1980s, the place of education in the society began deteriorating. The share of GDP devoted to public expenditure on education was, and continues to be, reduced considerably. Enrolment rates at different educational levels fall below the average for sub-Saharan Africa (Arestoff & Bommier, 2001) and there are no differential benefits in education between the poor and the non-poor (Glick & Razakamanantsoa, 2006). Further, because of the economic recession, Madagascar is now the epitome of countries that cannot ensure the development or maintenance of a quality public education system.

The country has been in a political crisis since 2009 and continues to be in the hands of temporary power. Government investments in human capital development are weak (The World Bank Group, 2011), particularly for ECCE that is allotted 0.22 percent of the education budget. Madagascar is one of the poorest countries in the world and in relation to other African countries it has the highest rate of poverty: 77% of the population (World Development Indicators, 2011). For children ages 3 to 5 only 7.3% have access to a formal school or programme (AEAI, 2010, personal communication). Furthermore, there exist disparities within the country between urban and rural areas, where the former is privileged over the latter. Poverty differs systematically

across groups of ethnic minorities, women, and those living in remote regions as well as those with little or no formal education (Stifel, Forster, & Barrett, 2010). Political instability, poverty, and a weak education system challenge local actors, international organizations and donors who look to researchers to examine whether investing in early learning and education in particular fosters the development of human capital in Madagascar.

A large body of research evidence and numerous literature reviews on the effects of ECCE (e.g. Camilli, Vargas, Ryan, & Barnett, 2010; Chambers, Cheung, Slavin, Smith, & Laurenzano, 2010; D'Onise, Lynch, Sawyer, & McDermott 2010; Reynolds, Magnuson, & Ou, 2010) provide fairly convincing evidence that early childhood interventions produce proven, positive results for children and society (Karoly, et al., 2005), which contributes, at least partially, to the seemingly universal acceptance that ECCE is a public good (Pence & Marfo, 2008). With all this evidence, it is reasonable to ask whether another literature review on ECCE is needed or not. Indeed, we argue that a different sort of literature review is necessary because of the huge disparities that exist between the contexts that predominate in the extant research and Madagascar; obviously, generalization of findings from one context to another should be done with caution, if at all. Specifically, we need to ask if child development gains associated with formal early learning and education in more economically developed places occur in Madagascar. Whether that is the case is a research question that may be addressed with reviews of the literature and empirical studies. Before conducting field research, we address this question in this article by reviewing the extant research relevant to ECCE in Madagascar, specifically to determine the impact of early learning and education on Malagasy children's cognitive and social development as well as school readiness.

This review has a specific scope and organization. Our scope is narrowed to particular ages of children and type of ECD programme. According to the United Nations Education Science and Culture Organization (UNESCO), ECCE spans from birth to the age of eight and an international definition specifies preschool as the two years prior to grade 1 (entry at age six) (UNESCO. 2007), so we limit our review to studies conducted with children ages 4 and 5. Concerning the type of ECD programme, we focus on early learning that occurs in the education sector, not to the exclusion of integrated programmes that may include health and sanitation, community and family involvement, and societal issues (e.g., employment, poverty), but few integrated programmes exist in low- and middle-income LAMI countries (Britto, Yoshikawa, & Boller, 2011); for example we do not review programmes focused on child nutrition without an educational component, though we do include educational programmes that provide meals. In the

first part of the review, we provide a brief overview of the global reviews on ECD research, because they provide the context for understanding the universal valuing of formal pre-primary education. Because studies from African countries are lacking in international literature, we have considered relevant a research on sub-Saharan African countries. These countries share some cultural, colonization and poverty aspects with Madagascar. We have presented this research in the second part of our paper. In the third part, we review research findings on ECCE and ECD, specifically in Madagascar. In the fourth and final section, based on the literature reviewed, we draw conclusions and offer suggestions for future research on pre-primary education in Madagascar.

2. Pre-primary Education Research that Informs Interventions Globally

There is an almost universal belief that pre-schooling leads to positive outcomes for children, adolescents, adults and society as a whole, based on a body of scientifically rigorous research. This body of research represents predominantly studies from developed countries and, taken as a whole, research shows that investing in pre-primary education makes sense both in terms of human capital development and government expenses, depending on programme characteristics. In the area of human capital, researchers have studied the impact of early learning and education on cognitive, social and emotional development, as well as later school success and long-term outcomes such as social delinquency and employment rates. Findings show large, short-term gains in cognition, but not long-term differences (Karoly, et al., 2005; Nelson & Westhues, 2003). Long-term factors effected by pre-primary education have been found in domains of educational, behavioural and social issues such as school dropout, delinquency, and unemployment, particularly among those living in disadvantaged circumstances in developed countries (Brooks-Gunn, 2003; Camilli, et al., 2010; Karoly, et al., 2005).

Concerning economic analysis, very few students, in relation to the number of studies published on ECCE, have examined programme costs, benefits and savings. From the few that have studied in North America, even fewer show long-term cost savings for governments' investment in ECCE. To calculate potential cost factors such as use of special education, postsecondary school costs, health, welfare reliance and earnings, among others, several programmes have been used. Here we present the four known programmes targeting children aged 4 and 5 (other ages may have been served simultaneously), that have conducted economic analysis. In Canada, the government had a cost savings of $912 (in U.S. Dollars, USD) per child by age 15 for those who had participated for four years in an early childhood development programme Better Beginnings,

Better Futures (Peters, et al., 2010); in this case, the largest savings came from not using remedial education services. In the U.S., at age 21, net savings per child were $41,067 for the Chicago Child–Parent Centres pre-school programme (Reynolds, Temple, Robertson, & Mann, 2002) and $94,802 for the Carolina Abecedarian Project (Barnett & Masse, 2007; Masse & Barnett, 2002). The return on investment continues after age 21 as the High/Scope Perry Preschool Project (Barnett, 1996) found that at age 40, with projections to age 65 of savings up to $229,645 per participant (Nores, Belfield, Barnett, & Schweinhart, 2005). Much of the savings in the U.S. studies are related to savings in earnings, taxes paid, and the cost of being incarcerated. One thing that is clear is that, in developed countries, research on cost benefits and cost savings of ECCE have only been observed when children were followed into adulthood (Brunner, 2004). These four studies have been evaluated by experts in the field of child development as being of high quality and methodologically rigorous (Karoly, et al., 2005; D'Onise, et al., 2010), so there is strong evidence that certain types of ECCE programmes can produce subsequent cost savings.

Generally, one may conclude, from the international literature published in the English language, that ECE works and that seemingly mixed findings in the literature actually represent an important nuance reflecting qualitative differences in interventions and in how research has been conducted, making the process of determining what works for whom, when and where more complex. The gold standard of research design is using a randomized trail (experimental) or a matched comparison group (quasi-experimental) along with standardized measures with established validity, reliability, and population norms. Another criterion sometimes used in evaluating research is the source of report such as researcher observations, self- or other-report (e.g., parents and teachers). There are debates about the value of objectivity and subjectivity in data from all sources of report and arguments for and against each type may be made; for example, parent report may be biased in favour of one's child or, inversely, parent report may provide a more accurate report because the parent knows the child better than a researcher. Similarly, it is clear that researchers have biases that enter into observations as well. This debate is beyond the scope of this paper. What is important here is that source of report may be used as a factor in evaluating previous research.

A recent study, conducted by a group of researchers, aimed at evaluating the evidence for the effectiveness of ECE programmes using the gold standard of research design and including only studies that used researcher observations of children (rather than potentially biased reports by parents and teachers who might give socially desirable responses) (Chambers et al., 2010). Using these criteria, their systematic review of the Anglophone literature, not restricting geographical

location, resulted in finding 40 studies that represent 28 different ECE programmes. In their analysis, 11 of the 28 programmes were effective in impacting academic outcomes by the end of preschool, six showed strong evidence (i. Curiosity Corner, ii. Direct Instruction, iii. ELLM, iv. Interactive Book Reading, v. Let's Begin with the Letter People, and xi. Ready Set Leap!) and five moderate (i. Breakthrough to Literacy, ii. Bright Beginnings, iii. Building Blocks plus DLM, iv. DLM Express plus Open Court, and v. Project Approach) (Chambers et al., 2010); other programmes had limited or insufficient evidence of effectiveness or effects, or the studies did not meet the criteria set for inclusion in this analysis. The authors noted two characteristics of the programmes reviewed: (1) a curriculum with either a cognitive and/or academic focus, and (2) educators who are trained extensively, supported well and receive "very frequent follow-up coaching by the developer or researchers" (p. 38). The academic focus was noted as providing a structure and objective content to guide the educators' work in the classroom. An additional critique of the literature argued that there is too little description of the conditions experienced by both the targeted intervention group and the comparison group. In the final analysis, they concluded that more high quality research is needed on programmes, particularly when they are scaled up, and more evidence is needed from longitudinal studies.

From our brief overview of pre-primary education research, we observe that some, but not all, ECE programmes impact cognitive and academic outcomes as well as later social and economic characteristics. In developed countries, children living in high-risk environments have more benefits from ECE than their more privileged peers, and these programmes may have associated government savings and benefits to society such as a lower number of delinquent incidences and higher education levels and employment. It is not clear from the international literature if the benefits seen for those living below the poverty line within contexts of economically developed countries transfers to places where the majority of the population is impoverished. Similarly, we do not know if the long-term costs savings related to crime and future earnings can be generated by preschool interventions in LAMI countries. The possibility exists that the impact of pre-schooling, as it is implemented in some places, on child development may be null, negative, or positive. For example, in sub-Saharan Africa, many threats and opportunities exist in employing ECD to facilitate meeting Millenium Development Goals have been identified (Garcia, Pence, & Evans, 2008).

3. ECCE Research from sub-Saharan African countries

In this second part, we review literature of ECE in sub-Saharan African countries that has relevance for the case of Madagascar within the context of threats and opportunities for formal early education in this region. A recent compilation of describing ECE in selected countries (covering all African countries in one book is difficult) reports on various complex aspects of programme development and delivery of services, specifically dealing with matters of consequence in politics, economics, health, socio-cultural and educational domains (Garcia et al., 2008).

Garcia and colleagues (2008) create an important framework for ECE showing the influence of histories of colonization, movements for localization and globalization simultaneously, and internal conflict or post-conflict situations. They inform us that economics of investing in ECE in African countries has not been addressed fully and questions remain about whether current funding is sustainable. This is a critical issue particularly when, in many cases, local governments are not investing in pre-primary education; support is coming from the international community of donors. There are more questions than answers in the literature about how to fund ECE in Africa.

Beyond funding the education sector, ECE is challenged as teaching and learning are only part of the equation and do not work in isolation from the socio-cultural context, consequential health issues of the effects of HIV/AIDS and lack of food security. The social and cultural issues that have to be addressed in managing the transition from home to school for children and their families are the role of fathers in parenting and the role of mothers in employment. Other issues to be addressed are nutrition and poverty. Malnutrition is related to the socioeconomic status, more so than whether one lives in an urban or rural area, though disparities in the socioeconomic status were found to be more pronounced in urban regions in a study of five African countries (Fotso & Kuate-Defo, 2006). We see that poverty impacts nutrition and nutrition is linked with child cognitive development. In a randomized control trial in South Africa with over 150 children, aged 3 to 6, providing a nutritional breakfast over a period of 52 days, showed a positive impact on mental processing and non-verbal cognitive development (Ogunlade, et al., 2011). The results from this experimental study provide important evidence that nutrition advances learning. Because the children's development and capacity for early learning depends on physical nutrition, Garcia and colleagues (2008) suggest that programmes addressing nutrition and ECE be synergistic.

In addition to the high quality study by Ogunlade and colleagues, several other scientifically rigorous studies have found that some preschools have a positive impact on child development in several African countries. In a randomized controlled trial in Botswana, children attending preschool scored higher in science, mathematics, and language at grade 1 than children who did not attend preschool (Taiwo & Typolo, 2002). Another group of studies was conducted to examine the impact of preschool on children and the effect of the Madrasa preschool programme in particular. In a study using a quasi-experimental, three-group design with over 400 children located in Kenya, Uganda, and Tanzania/Zanzibar, findings show that children who attend preschool have higher scores on the British Ability Scale and the African Child Intelligence Test than children not attending preschool. Further, comparisons between children attending a Madrasa preschool and those in other preschools showed that children in Madrasa schools have statistically significantly greater gains on these scales than those attending other preschools; these differences were found with assessments made at a pre-test and then again 18 months later (Mwaura, Sylva, & Malmberg, 2008). In a subsequent study using a cross-sequential design testing over 300 children's outcomes at three time points (ages 4, 6, and 7) this group of researchers found, once again, that those attending Madrasa preschool centres perform better than non-attending counterparts (Malmberg, Mwaura, & Sylva, 2011).

During the past decade, scholars have begun addressing issues about the quality of programming (e.g., studies of the Madrasa programme) and curriculum content, with particular concern for whether preschool is culturally relevant incorporating indigenous knowledge because of the prevalence of ECE interventions based on models from developed countries (Bar-On, 2004; Pence & Marfo, 2008; Schafer, et al., 2004). Archival analysis in South Africa found that music education is an important tool for making curriculum culturally relevant and for teaching multicultural values (Woodward, 2007) and that preschool also provides opportunities for addressing the African diaspora in the early years (Dillard, 2004). In a novel example, we see an expansion of curriculum ideas for ECE to include economic concepts. In a small case study of 23 South African children aged 4 to 6.5 years, statistically significant changes over time were observed at three time points: baseline, end of the programme and one month later, on learning about money, income, expenses and savings (Roos, et al., 2005). Another issue raised about the characteristics of the ECE programme is the role of parents, in the literature but largely understudied, and under valued. A study of parents participation in some South African preschool programmes found that parents are not always engaged in effective ways (Bridgemohan, 2002). There are few studies globally, including in African countries, that have examined the role of

parents and quality of ECE interventions (Britto et al., 2011), so this is clearly an area where more research is needed.

To evaluate this body of research, we comment on selected studies designed to address research questions about the impact of preschool on children that used pre-post test designs in sub-Saharan Africa. Some of the important studies to date in this region have included sample sizes of more than 100 children and used standardized measures to assess children's cognitive development in one or more domains, often adapting instruments created in developed countries. A classic example that highlights aspects of adapting measures comes from a study of Piagetian conservation skills. Although not a study of the impact of ECE, findings from an early study of conservation skills with 139 children ages 8 to 14 from Tanzania showed that after adapting the assessment tool and process for administering it, children from Tanzania show skills similar to European children (Nyiti, 1976). This finding has had implications for adapting childhood development assessment instruments and procedures. Specifically, in addition to linguistic and cultural adaptations, Nyiti (1976) has argued that attention needs to be given to methods of estimating a child's age and how assessments are administered; methods for determining a child's age vary with contexts where official birth records are not available. He argued, assessment administration needs to be flexible, rather than conducted as a rigid standard test. Another important aspect of conducting research with quantitative assessments is examining the psychometric properties of the instruments used. The studies above reported credible scale properties as has another study that examined specifically the adaptation of instruments to assess perceptual and motor skills, finding the tool was reliable (alpha coefficient = .075) among a multi-ethnic sample of 254 South African children and it had convergent validity with teacher report (Dunn, Loxton, & Naidoo, 2006). In many developing countries, the approach of adapting measures appears to be the dominant practice for research questions examining impact or comparing programme types (for a collection of measures see Fernald, Kariger, Engle, & Raikes, 2009). Our review of the extant research reveals that rigorous designs with adequate sample sizes using adapted standardized measures have found that preschool is positively impacting a variety of outcomes of child development in sub-Sahara Africa, and some types of preschool have greater impacts than others.

4. Research Findings on the Impact of ECCE on Children in Madagascar

In this third part, we review research findings relevant to ECE and ECD in Madagascar. Arguably, the most important recent work on ECD in Madagascar is a study by Mingat and Seurat (2010) that offers a comprehensive overview on the development of children 0-6 years and parenting. This survey addressed a number of critical issues, asking the mothers about conceptions of early childhood development, as well as practices and behaviours with children. Parenting practices were investigated in a number of dimensions including the use of time, relational patterns, emotional reactions to their particular situations (diseases, behaviour, etc.), nutrition, rest and sleep, hygiene, care, protection and monitoring of the child, language, games, and the degree of autonomy given to the child. The survey also explored how families use time with children. Findings show that time given by mothers to care for their young children is extremely variable from one family to another; time spent outside the home is five hours per day on average, but varies widely from situations where mothers are mainly present in the home to mothers who are absent for more than 10 hours. The mothers' responses indicate a time of about an average two hours and thirty minutes of daily contact with their child, a time that varies little from the economic conditions of the household but is lower in urban areas (2 hours) and rural (2:45). This time is highly variable from one province to another (1:30 in Antsiranana against more than 3 hours in Mahajanga). Daily activities concerning food and hygiene consumed on average 1:30 and playful interactions with the child receive an average of about 1:00, noting that play time increased as wealth and mothers' education increased, perhaps suggesting that these activities correspond to more "modern" parenting practices. Mingat and Seurat (2010) pointed out that a significant percentage of children at age six fail to master simple tasks: (50% of children cannot answer simple questions; 34% of children have difficulty saying their name, age, gender; 50% have difficulties to reproduce simple plots; 34% have difficulty holding a book). This study shows the need to adapt the structures of early childhood education and child care in Madagascar to the socioeconomic conditions of families and the regional specificities. In addition, this study shows the need for preschools to improve children's school readiness.

There are other descriptive and co-relational studies on child development in Madagascar relevant to understanding preschool, in spite of these studies not investigating the effects of preschool. A recent study of 1332 children, with ages 3 to 6, living in 150 communities of Madagascar, found a relationship between mothers' income and education and child development outcomes; similar to other countries the finding is that as wealth and education increase so do scores on cognitive and linguistic assessments. Although the study did not examine the impact of preschool on child development, it serves as a contemporary example of adapting intelligence and vocabulary tests

used in developing countries for research in Madagascar and these tests had accepted levels of reliability and showed adequate variation in responses for detecting differences with their sample group. The scores on these measures may serve as a point of comparison for future studies on the impact of preschool on child development. Although a bit more distant from our topic, other studies examining children's cognitive development (specifically concerning the concept of mortality related to biology and to religion) have been conducted with children ages 5 to 7 and ages 8 to 17 (Astuti & Harris, 2008). Both of the studies reviewed here serve as examples for assessing developmental outcomes.

In a study on children's academic outcomes in primary school we see that management at the school and district levels play an issue impacting student outcomes with more effectively managed schools showing lower levels of absence, repeating grades, etc. (Lassibille, Tan, Jesse, & Nguyen, 2010) and that efficiency varies across schools within the public system Lassibille, & Tan, 2003); research on the public versus private debate in Madagascar is beyond the scope of this review (readers are referred to Arestoff, & Bommier, 2001; Lassibille, & Tan, 2003). These findings about a relationship between school operational issues and student academic outcomes have implications for preschools in Madagascar attached to a primary school, as is the case with AEAI efforts; it may be important to assess pedagogical functions and the role that key actors in schools play in the implementation.

Another opportunity in ECE may be to link health education with literacy, as has been suggested in a research with 6 to 14 year-olds in Madagascar (Mahr, Wuestefeld, Ten Haaf, & Krawinkel, 2005). A somewhat related point to consider is who will take young children to school, as it has been found that one of the barriers to accessing education is time used in retrieving water (Larson, Minten, & Razafindralambo, 2006). Access to water, health education and early childhood education are interrelated issues.

In the fourth and final section, we draw conclusions from the literature reviewed and offer suggestions to guide research whose findings will have implications for future investments in pre-primary school in Madagascar. The knowledge base on the impact of preschool education in Madagascar is practically non-existent. Studies of child development in general and cognitive development in particular for children ages 3 to 6 have the most relevance for future research and programming on preschools. The monograph on child development in Madagascar, published by the Society for Research on Child Development in 2004, explores conceptual development in Madagascar from childhood to adulthood, and is not without criticism for the underlying assumptions of this work (see Ingold, 2004 and the reply Austuti & Carey, 2004). Whichever side

one takes of the intellectual arguments, this monograph contributes to a very limited body of knowledge of child development in Madagascar.

The study of the impact of a preschool education programme is complex, but is also very necessary particularly in a country such as Madagascar, where internal resources available for education are weak and uncertain, and external funding is mostly directed at programming without knowing what works in this context. Most of the knowledge about the effects of preschooling come from research on programmes in North America. Research from the sub-Saharan region has relevance for conducting research and ECE in Madagascar. This literature review shows that several conditions must be met for a methodology to be as appropriate as possible for the target of the research.

Firstly, the impact of a preschool education has some short and intermediate term outcomes, but most of the benefits and cost savings happen many years later in adolescence and well into adulthood. Attending a high quality preschool programme is associated with short term cognitive gains and may impact numeracy and literacy skills. In the intermediate period, a widely used indicator of preschool impact is the transition into primary school; clearly this is a time to look into the life of a child because it is a crucial time in terms of school readiness. Beyond school readiness, the research reviewed implies a need for the implementation of longitudinal studies over several years.

Secondly, the literature review has highlighted the extreme diversity of programmes in terms of the philosophy, organization and teaching of the curriculum. One way to measure the impact of a programme is to compare it with another programme. But, in the case of Madagascar, only a minority of children attend preschool before entering primary school. It is therefore important to compare the skills of elementary school children who have had preschool to children who have not.

Thirdly, the impact of a programme of education is directly related to the environment in which young children spend most of their time: the family and the community. So, having these data is important.

Fourthly, the literature converges on the importance of having high quality preschool education, where quality is impacted by local factors, the adult-pupil ratio, organizational learning in the classroom and the skills of educators in determining the impact of preschool. It is therefore crucial to observe how the educational activities taking place in the classroom and school.

Klees (2010, p. 21) suggests six orientations to make aid in education more relevant in developing countries. This orientation applies, in our understanding, to the situation or early childhood education in Madagascar:

- "Impact the poor: Clearly, we want to do a much better job of having aid reach its intended beneficiaries.

- Emphasize gender: The inequalities and discrimination faced by girls and women are unjust and have been a major barrier to development.

- Go to scale: We have had thousands of very effective projects at a local level, often run by NGOs; we need to implement many of them on a large scale.

- Consider the environment: we are facing a global ecological crisis, and aid requires an integral examination of its impact on the environment.

- Pay attention to issues of peace and conflict: Over forty countries are in a state of conflict or post-conflict, and we live in a world where aggression is ubiquitous.

- Use a human rights framework: We have many United Nations agreements about human rights, but aid agencies generally ignore them".

References

Anonymous (2007). EDUCATION: Madagascar rebuilds schools. Africa Research Bulletin: Political, Social and Cultural Series, 44(5), 17100A-17100C. doi:10.1111/j.1467-825X.2007.01049.x.

Arestoff, F., & Bommier, A. (2001). Efficacité relative des écoles publiques et privées à Madagascar : étude d'une période de restriction budgétaire. *Revue d'Economie du Développement*, 3, 51-73.

Astuti, R., & Carey, S. (2004). Constraints on Conceptual Development: Reply. *Monographs of the Society for Research in Child Development*, 69(3), 153-161.

Astuti, R. & Harris, P. L. (2008). Understanding mortality and the life of the ancestors in rural Madagascar. *Cognitive Science*, 32, 713-740.

Barnett, W. S. (1996). *Lives in the balance: Age-27 benefit-cost analysis of the High/Scope Perry Preschool Programme* [Monographs of the High/Scope Educational Research Foundation,11]. Ypsilanti, MI: High/Scope Press.

Barnett, W. S., & Masse, L. N. (2007). Comparative benefit-cost analysis of the Abecedarian programme and its policy implications. *Economics of Education Review*, 26, 113–125.

Bar-On, A. (2004). Early childhood care and education in Africa: The case of Botswana. *Journal of Early Childhood Research*, 2(1), 67-84. Retrieved from www.csa.com.

Bridgemohan, R. R. (2002). Parent involvement in early childhood development in KwaZulu *natal* (South Africa, KwaZulu-natal). Retrieved from http://gateway.proquest.com.remote.libproxy.wlu.ca/openurl?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&res_dat=xri:pqdiss&rft_dat=xri:pqdiss:0807212.

Britto et al. (2011). Quality of Early Childhood Development Programmes in Global Contexts. Rationale for Investment, Conceptual Framework and Implications for Equity. *Sharing child and youth development knowledge*, 25 (2), SRCD, Social Policy Report.

Brooks-Gunn, J. (2003). Do you believe in magic? What we can expect from early childhood intervention programmes. *Social Policy Report*, 17, 3-14.

Camilli, G., Vargas, S., Ryan, S., & Barnett, W. S. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers College Record*, 112(3), 579–620. Retrieved from http://www.tcrecord.org ID Number: 15440

Chambers, B., Cheung, A., Slavin, R.E., Smith, D., & Laurenzano, M. (2010, September). *Effective Early Childhood Education Programmes: A Systematic Review*. Baltimore, MD: Johns Hopkins University, Center for Research and Reform in Education.

Dillard, C. B. (2009). I am because we are: Increasing educational opportunity for early childhood education in Ghana, West Africa. *Race/ Ethnicity: Multidisciplinary Global Contexts*, 2(2), 243-257. Retrieved from www.csa.com

D'Onise, K., Lynch, J. W., Sawyer, M. G., & McDermott, R. A. (2010). Can preschool improve child health outcomes? A systematic review. *Social Science & Medicine*, 70, 1423-1440.

Dunn, M., Loxton, H., & Naidoo, A. (2006). Correlations of scores on the developmental test of visual-motor integration and copying test in a South African multi-ethnic preschool sample. *Perceptual and Motor Skills*, 103(3), 951-958. Retrieved from www.csa.com

Fernald, L, C. H., Weber, A., Galasso, E., & Ratsifandrihamanana, L. (2011). Socioeconomic gradients and child development in a very low income population: evidence from Madagascar. *Developmental Science*, 14(4), 832-847.

Fernald, L, C. H., Kariger, P., Engle, P., & Raikes, A. (2009). *Examining early child development in low-income countries: A toolkit for the assessment of children in the first five years of life*. Washington, D.C.: World Bank.

Fotso, J., & Kuate-Defo, B. (2006). Household and community socioeconomic influences on early childhood malnutrition in Africa. *Journal of Biosocial Science*, 38(3), 289-313. doi:10.1017/S0021932005026143

Garcia, M., Pence, A., & Evans, J. L. (2008). *Africa's future, Africa's challenge: Early childhood care and development in sub-Saharan Africa*. Washington, D.C.: World Bank. Retrieved from www.csa.com.

Glick, P., & Razakamanantsoa, M. (2006). The distribution of education and health services in Madagascar over the 1990s: Increasing progressivity in an era of low growth. *Journal of African Economies*, 15(3), 399-433. Retrieved from www.csa.com.

Ingold, T. (2004). Conceptual development in Madagascar: A critical comment. *Monographs of the Society for Research in Child Development*, 69(3), 136-144.

Jaramillo, A., & Mingat, A. (2008). Early childhood care and education in sub-Saharan Africa: What would it take to meet the millennium development goals? In M. Garcia, A. Pence & J. L. Evans (Eds.), *Africa's future, Africa's challenge: Early childhood care and development in sub-Saharan Africa* (pp. 51-70). Washington, D.C.: World Bank. Retrieved from www.csa.com

Karoly, L. A., Kilburn, M. R., & Cannon, J. S. (2005). *Early childhood interventions: Proven results, future promises*. Santa Monica, CA: RAND Corporation.

Klees, S. J. (2010). Aid, Development, and Education. *Current Issues in Comparative Education*, 13(1), 7-28.

Larson, B., Minten, B., & Razafindralambo, R. (2006). Unravelling the linkages between the Millennium Development Goals for poverty, education, access to water and household water use in developing countries: Evidence from Madagascar. *Journal of Development Studies*, 42(1), 22-40. doi:10.1080/00220380500356258

Lassibille, G., & Tan, J. (2003). Student learning in public and private primary schools in Madagascar. *Economic Development and Cultural Change*, 51(3), 699-751. Retrieved from www.csa.com.

Lassibille, G., Tan, J., Jesse, C., & Nguyen, T. V. (2010). Managing for results in primary education in Madagascar: Evaluating the impact of selected workflow interventions. *World Bank Economic Review*, 24(2), 303-329. Retrieved from http://wber.oxfordjournals.org.remote.libproxy.wlu.ca.

Mahr, J., Wuestefeld, M., Ten Haaf, J., & Krawinkel, M. B. (2005). Nutrition education for illiterate children in southern Madagascar--addressing their needs, perceptions and capabilities. *Public Health Nutrition*, 8(4), 366-372. Retrieved from www.csa.com

Malmberg, L., Mwaura, P., & Sylva, K. (2011). Effects of a preschool intervention on cognitive development among East-African preschool children. A flexibly time-coded growth model. *Early Childhood Research Quarterly*, 26(1), 124-133. Retrieved from www.csa.com.

Masse, L. N., & Barnett, W. S. (2002). *A benefit cost analysis of the Abecedarian Early Childhood Intervention*. New Brunswick, NJ: National Institute for Early Education Research.

Mingat, A., & Seurat, A. (2010). *Développement des enfants de 0 à 6 ans et pratiques parentales à Madagascar*. Dijon: IREDU-UNICEF.

Mwamwenda, T., & Grewal, A. (2000). Conservation skills among preschool children in Umtata, South Africa. *Psychological Reports*, 87(1), 21-22. Retrieved from www.csa.com.

Mwaura, P. A. M., Sylva, K., & Malmberg, L. (2008). Evaluating the Madrasa preschool programme in East Africa: A quasi-experimental study. *International Journal of Early Years Education*, 16(3), 237-255. doi:10.1080/09669760802357121.

Nelson, G., Westhues, A., & MacLeod, J. (2003). A meta-analysis of longitudinal research on preschool prevention programmes for children. *Prevention and Treatment*, 6. Retrieved from http://journals.apa.org/prevention/volume6/toc-dec18-03.html.

Nores, M., Belfield, C. R., Barnett, W. S., & Schweinhart, L. (2005). Updating the economic impacts of the High/Scope Perry Preschool Programme. *Educational Evaluation and Policy Analysis*, 27(3), 245–261.

Nyiti, R. M. (1976). Development of Conservation in the Meru Children of Tanzania. *Child Development*, 47(4), 1122-1129

Ogunlade, A., Kruger, H., Jerling, J., Smuts, C., Covic, N., Hanekom, S. (2011). Point-of-use micronutrient fortification: Lessons learned in implementing a preschool-based pilot trial in South Africa. *International Journal of Food Sciences and Nutrition*, 62(1), 1-16. Retrieved from www.csa.com.

Pence, A. R., & Marfo, K. (2008). Early childhood development in Africa: Interrogating constraints of prevailing knowledge bases. *International Journal of Psychology*. Special Issue: Culture and Human Development, 43(2), 78-87. doi:10.1080/00207590701859143.

Peters, R.DeV, Bradshaw, A.J., Petrunka, K., Nelson, G., Herry, Y., Craig., W.M., Arnold, R., Parker, K., Kahn, S., Hoch, J., Pancer, M., Loomis, C., Bélanger, J.M., Evers, S., Maltais, C., Thompson, K., and Rossiter, M. (2010). The Better Beginnings, Better Futures project: Parent, family, and community outcomes at grades 6 and 9 of a universal, comprehensive, community-based prevention approach for primary school children and their families. *Society for Research in Child Development (SRCD)*, 73(3), 1-246.

Reynolds, A. J., Magnuson, K. A., & Ou, S-R. (2010). Preschool-to-third grade programmes and practices: A review of research. *Children and Youth Services Review*, 32, 1121-1131.

Reynolds, A. J., Temple, J. A., Robertson, D. L., & Mann, E. A. (2002). Age 21 cost-benefit analysis of the Title I. Chicago Child–Parent Centers. *Educational Evaluation and Policy Analysis*, 24(4), 267–303.

Roos, V., Chiroro, P., van Coppenhagen, C., Smith, I., van Heerden, E., Abdoola, R. E. (2005). Money adventures: Introducing economic concepts to preschool children in the South African context. *Journal of Economic Psychology*, 26(2), 243-254. doi:10.1016/j.joep.2004.08.001.

Schafer, J., Ezirim, M., Gamurorwa, A., Ntsonyane, P., Phiri, M., Sagnia, J. (2004). Exploring and promoting the value of indigenous knowledge in early childhood development in Africa. *International Journal of Educational Policy, Research, and Practice: Reconceptualizing Childhood Studies*, 5(3), 61-80. Retrieved from http://www.ijeprp.org.remote.libproxy.wlu.ca/.

Stifel, D., Forster, F., & Barrett, C. (2010). The evolution of groupwise poverty in madagascar, 1999-2005(dagger). *Journal of African Economies*, 19(4), 559-604. Retrieved from www.csa.com.

Taiwo, A.A., & Tyolo, J.B. (2002). The effect of preschool education on academic performance in primary school: A case study of grade one pupils in Botswana. *International Journal of Educational Development*, 22, 169–180.

United Nations Educational, Scientific and Cultural Organization. (2007). *Strong foundations: Early childhood care and education* (EFA global monitoring report 2007). France: Paris. Retrieved from http://unesdoc.unesco.org/images/0014/001477/147794e.pdf.

Woodward, S. C. (2007). Nation building--one child at a time: Early childhood music education in South Africa. *Arts Education Policy Review*, 109(2), 33-24. Retrieved from www.csa.com.

The World Bank Group, Madagascar: Country Brief accessed November 16, 2011, http://go.worldbank.org/D41QD46W10s.