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PROMOTION OF LITERACY IN SUB-SAHARAN AFRICA: GOALS AND PROSPECTS OF CAPOLSA AT THE UNIVERSITY OF ZAMBIA

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Abstract: *The convergence of two complementary agendas motivated collaboration between two universities (in Zambia and Finland) to establish the Centre for the Promotion of Literacy in Sub-Saharan Africa (CAPOLSA), focused on initial literacy learning in indigenous languages. The project's mandate and activities are closely related to Zambia's national context of literacy and educational provision, emerging trends in information and communication technology, and the University of Zambia's institutional context of research and development on literacy, child development, and education. CAPOLSA has afforded opportunities for enhancing the working relations between the national university and government and for contributing to the development of institutional linkages and consultative forums. Collaboration between various disciplines, institutions, and economic sectors characterizes CAPOLSA's activities. Important areas of progress envisaged include institutional development, growth of a sustainable community of researchers whose collective efforts will increase the scale of Africa's contribution to international knowledge, and evidence-based planning at the interface between humans and technology.*

Keywords: *initial literacy learning, indigenous languages, evidence-based planning, collaboration, Africa.*

INTRODUCTION

Promotion of literacy is a widely endorsed agenda for progressive social change in sub-Saharan Africa. This region of the world has suffered from multiple disadvantages over the past two centuries, including political oppression, armed conflict, economic exploitation, a massive burden of disease, and widespread material poverty. Low levels of literacy place a significant constraint on effective participation in societal progress and economic growth by most of the region's rapidly growing population. Recent advances in technology have the potential to contribute to the success of the education sector to overcome that constraint. The North–South collaboration described in this paper has focused on fulfilling that potential under the auspices of the new

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Centre for the Promotion of Literacy in Sub-Saharan Africa (CAPOLSA), established at the University of Zambia (UNZA), to promote support for children's acquisition of literacy in Zambian languages.

I begin this paper by reflecting on the convergence of two complementary research agendas, one emanating from the North, the other from the South. Next I provide an outline of Zambia's national context of literacy and educational provision, within which CAPOLSA's institutional mandate and activities are situated. Two other dimensions of context are then presented: Zambia's current national uptake of information and communication technologies (ICTs) and UNZA's institutional emphasis on research and development in literacy, child development, and education. Reflecting on CAPOLSA's first 3 years of experience, I describe how it has contributed to the working relations between Zambia's national university and government, as well as to the development of institutional linkages and consultative forums in close collaboration with other organizations. To conclude, I identify some important growth points for CAPOLSA and reflect on some lessons learned about evidence-based planning at the interface between humans and technology.

COLLABORATIVE NORTH–SOUTH CONVERGENCE OF TWO COMPLEMENTARY AGENDAS

CAPOLSA was born out of a convergence of interests between researchers in Zambia and Finland. For UNZA, the key motivating agenda has been the search for effective strategies, methods, and resources to address the challenge of poor literacy outcomes in mass basic schooling (a widely acknowledged social problem in Zambia and in many countries in sub-Saharan Africa). For the University of Jyväskylä in Finland, a major goal has been to test and extend universalistic theories and principles of professional practice for the optimization of initial literacy acquisition. The convergence of these different overarching goals on the CAPOLSA collaboration is more than a matter of convenience. As Cole and Engeström (2007, p. 484; italics in the original) have noted, following Vygotsky, "the implementation of theory in practice is not a marginal scientific goal in the study of human development—it is essential to understanding the complex interplay of different life processes, '*in life*,' not just in theory."

The longitudinal study of dyslexia by Lyytinen and his colleagues (for the latest extensive reviews, see Lyytinen et al., 2008) in Finland gave rise to a computer-based instructional phonics game (GraphoGame;[1] Lyytinen, Erskine, Kujala, Ojanen, & Richardson, 2009), whose educational effectiveness has since been empirically confirmed for samples of school-going children in Finland (Saine, Lerkkanen, Ahonen, Tolvanen, & Lyytinen, 2011) and in England (Kyle, Kujala, Richardson, Lyytinen, & Goswami, 2013). Building on those findings, the collaborative intervention study of Reading Support for Zambian Children was designed to test the generalizability of a scientifically grounded, technologically sophisticated, instructional resource as an effective educational intervention in an African society where linguistic and educational conditions differ from those in which its effectiveness had been established in Western Europe (Lyytinen et al., 2012). The project was welcomed by researchers and policymakers in Zambia as a promising response to growing dissatisfaction in Zambian society regarding the very limited success rate of government efforts to achieve

Goal 6 of the Education for All movement, namely "improving all aspects of the quality of education, and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills" (World Education Forum, 2000, Item 7, vi).

The multisectoral collaboration that has ensued can be understood as a case of "design-based implementation research." This research approach calls for four complementary elements:

> a focus on persistent problems of practice from multiple stakeholders' perspectives; a commitment to iterative, collaborative design; a concern with developing theory related to both classroom learning and implementation through systematic inquiry; and a concern with developing capacity for sustaining change in systems. (Penuel, Fishman, Cheng, & Sabell, 2011, p. 332)

ZAMBIA'S NATIONAL CONTEXT OF LITERACY AND EDUCATIONAL PROVISION

Many of the challenges facing Zambian society revolve around a felt need for broader and more equitable distribution of resources: not only material wealth and political power, but also knowledge. Access to formal education is often claimed in the public domain as a fundamental human right. Over the past 5 decades, considerable progress has been achieved in the expansion of educational facilities and in student enrollment. Yet it is widely recognized that the outcomes of basic schooling fall far short of expectations (Examinations Council of Zambia, 2013), with a majority of enrolled learners failing to attain minimal standards of literacy or numeracy by Grade 6 (Hungi et al., 2010).

If education is to realize its potential as a resource for progressive social and economic change, the outcomes must include an increased proportion of the population who are sufficiently literate to (a) understand documentation of their civic rights and duties and the consequences of development projects, (b) contribute to critical and constructive analyses of local and national projects, and (c) express their locally felt needs in forms that command the attention of policy makers and administrators. Currently, such applications of individual literacy to activities that might lead to economic empowerment and civic engagement are largely inaccessible to the majority of youths graduating from the public system of basic schooling. The national Grade 7 school-leaving certificate guarantees the individual's ability to read and write in English. However, that level of competency falls far short of the demands of reading an in-depth newspaper article or composing a coherent position paper about a local community problem and how it might be addressed.

Zambia participated in a regional exercise conducted by SACMEQ[2] in 2007 that administered carefully standardized tests of literacy and numeracy to a large, representative nationwide sample of pupils enrolled in Grade 6. Reading skills were assessed at 8 levels, with Levels 1–3 representing prereading, emergent reading, and basic reading, respectively, and Levels 4–8 represented reading for meaning, interpretive reading, inferential reading, analytical reading, and critical reading, respectively. The results showed that only 27% of Grade 6 pupils were able to read above the very rudimentary Level 3 in their penultimate year of primary schooling. The distribution of reading skills was uneven across social strata: 52% of the children from high socioeconomic status (SES) families achieved the upper-level skills, compared with

only 17% of those from low SES families; 38% of pupils enrolled in urban schools achieved the upper-level skills compared with only 22% of those in rural schools. The study also took an inventory of "pupil learning materials" and computed an index of **"**possession of at least one of each of eight important learning materials: an exercise book, a notebook, a pencil, a sharpener, an eraser, a ruler, a pen, and a file" (Hungi, 2011, p. 32). This index was predictive of a small but significant proportion of the variance in average reading level achieved across schools in a multiple regression analysis of the Zambian data (Hungi, 2011).

The SACMEQ study provided rigorous and disturbing evidence that the average level of literacy achieved by children in Zambia's mainstream primary schools is very low and that it is heavily influenced by family income and residential setting. The results also suggested that access by children to instructional resources makes a difference in the level of literacy they achieve. Interpreting these findings calls for recognition of the sociolinguistic complexity of Zambian society (Serpell, in press). Children in Zambia and many other African countries grow up in a setting where most adults are competent in three or more language varieties. Moreover, as in many postcolonial states, the language of former colonial administration, English, is generally used in Zambian society for many high prestige social functions, while the indigenous languages predominate in the domain of "hearth and home."

The indigenous languages all belong to the Bantu taxonomic group within which varieties share a strong core of grammatical and lexical commonalities and the borders between them are porous. Initial literacy instruction has had a checkered history in Zambia. During the colonial period, mission schools and government schools favored the use of the indigenous African languages as the media of instruction in the early grades. However, shortly after independence in 1964, the Government introduced the English Medium Scheme under which children received initial literacy instruction from Grade 1 in the medium of English, a language used by very few families as the medium of everyday communication with children. Gradual reform of this policy, as explained below, has been an important backdrop to the establishment of CAPOLSA.[3]

CAPOLSA'S INSTITUTIONAL MANDATE AND ACTIVITIES

CAPOLSA was established at UNZA in May 2011, in cooperation with the University of Jyväskylä, Finland, with financial support from the Government of Finland through its Ministry of Foreign Affairs. The mandate of CAPOLSA specifies the following goals:

(a) to promote support for children's acquisition of literacy in Zambian languages among parents, families, and preschool teachers;

(b) to provide technical support in curriculum and instruction to the various training institutions mandated to prepare teachers for initial literacy instruction in the nation's lower primary school grades;

(c) to create, collate, and disseminate child-friendly reading materials in the Zambian languages used as media for initial literacy instruction;

(d) to develop guidelines for the harmonization of orthographies across the various Bantu languages as used in the various countries of sub-Saharan Africa; and

(e) to offer specialized, advanced education to create a critical mass of expertise at UNZA for conducting research in support of those goals.

During its first 3 years of operation, CAPOLSA has achieved progress towards its target outcomes of (a) increased professional expertise in Africa for conducting and disseminating research evidence on optimal ways of promoting literacy; (b) increased availability of child-friendly reading materials in African languages; (c) demonstrated effective deployment of computer-mediated learning resources in Zambian public primary schools to support children's mastery of foundational literacy skills; and (d) dissemination of research evidence relevant to effective promotion of literacy in sub-Saharan Africa. The following planned activities were implemented in 2013:

- Technical support for local scholars in statistical data analysis and sponsorship of their international travel to disseminate the findings of ongoing research on initial literacy learning in Zambia;
- Support for the African regional GraphoLearning Diploma Programme;[4]
- Publication of Early Grade Readers in four of Zambia's indigenous languages and editorial preparation of Readers in three other Zambian languages;
- Logistical planning for effective dissemination of the Readers in print and digital format;
- Professional development workshops for writers of child-friendly reading materials in Zambian languages;
- Production of audio–visual learning aids and instructional videos for teachers;
- Field testing of digital (android) tablets in Lusaka public primary schools for shared use by multiple early-grade learners as a platform for disseminating GraphoGame, child-friendly texts in local languages, and other learning resources; and
- Various stakeholder sensitization activities.

Steps were taken in 2013 to facilitate the project's sustainable integration within UNZA. Synergies were achieved with the literacy programs of the Zambian government's Curriculum Development Centre and the Read to Succeed project. Partnership with the Government was strengthened by its launch of a new National Literacy Framework.

ZAMBIA'S NATIONAL CONTEXT OF INFORMATION AND COMMUNICATION TECHNOLOGY

Africa has been a relative latecomer by global standards to the world of ICTs. For instance, in 2008 only 4.2% of the population of Africa were Internet users, compared with 23% worldwide (International Telecommunication Union [ITU], 2013). Within the region, Zambia was an early leader, if not "the pioneer of Internet services in the Sub-Saharan Africa" (Bwalya, 2010, p. 4). The number of Internet users in Zambia per 100 population was estimated to be 13.47 in 2012, more than double the estimate for 2009. Even so, at less than 14%, the level of access is quite low as compared to 91% in Finland, 87% in UK, 81% in USA, 41% in South Africa, 33% in Nigeria, and 32% in Kenya. Yet Zambia remains well above the level in neighboring countries Congo, Malawi, Mozambique, and Tanzania (all less than 5%; ITU, 2013).

One dramatic growth point in ICT utilization in Zambia has been the use of personal cell phones. Internet service providers make up a conspicuously prosperous sector of the economy and provide coverage to almost all areas of this large, sparsely populated country. In a country roughly the size of Finland and Norway combined, 40% of Zambia's 14 million people live in

urban areas, and the rest are unevenly distributed across rural areas. Although a cell phone was considered a luxury item in Zambia a decade ago, the majority of urban adults today, many of whom live below the poverty line, now own a cell phone, and at least one can be found in almost every village. The significance of this development for the spread of literacy is increased by the fact that the cost per word for text messaging is considerably less than the quite high cost of audio communication. Thus many users prefer text messaging for economic reasons. Although the style of spelling in text messaging is often abbreviated, as elsewhere around the world (Bushnell, Kemp, & Martin, 2011), a minimal level of literacy is essential for communication via this highly affordable and popular technology.

In the spheres of research and higher education in Africa, modern ICT has been recognized as a powerful resource for linking the region to the rest of the world, enabling Africans to access the rapidly expanding body of knowledge and to contribute to it (Twinomugisha, 2007). At UNZA, ICTs have been a major focus of capital investment, and both students and researchers manifest a very positive appreciation of their value. For instance, in the 6 years since the Web-based network ResearchGate[5] was founded, 178 UNZA researchers from 20 academic departments have become registered members. Even though the cumulative impact of their uploaded publications remains modest, it compares favorably with other universities in the Southern African Development Community subregion outside South Africa and is growing rapidly.

The Reading Support for Zambian Children (RESUZ) intervention study, results of which are expected to be published in 2014, sought to leverage the growing availability of cell phone technology as a platform for disseminating the GraphoGame to children learning to read in the low-resource settings of government primary schools. The study found that urban children were quick to learn how to handle smartphones with touch screens, and teachers appreciated the instructional support provided by the game's explicit programming of letter–sound correspondence rules. Further research is needed to evaluate how the cognitive benefits of the technology mesh with economic and cultural constraints to determine the effectiveness of ICTs across the full range of the nation's educational activities.

THE UNIVERSITY OF ZAMBIA'S INSTITUTIONAL CONTEXT OF RESEARCH AND DEVELOPMENT ON LITERACY, CHILD DEVELOPMENT, AND EDUCATION

UNZA is Zambia's largest and oldest university and has a track record of significant research and publication. Established at the time of political independence as a national, public institution with the motto "Service and Excellence," the university is mandated to provide quality higher education to address the human resource needs of the nation, to generate new knowledge and understanding through systematic research, and to provide technical support for the application of knowledge for the benefit of Zambian society. Most of the professional personnel within Zambia's Ministry of Education (including the vast majority of secondary-level school teachers and the staff of specialized support units, such as the Curriculum Development Centre) received their tertiary education from UNZA or one of its affiliated colleges.

In addition to offering its own degree programs, UNZA provides superintendence and certification services to a number of other tertiary-level educational institutions in the country that are formally affiliated with the university, including 10 secondary-level teacher training colleges, a number of teacher training colleges dedicated to the preparation of teachers for professional

service in basic schools (Grades 1–9), and the Zambia Institute of Special Education. However, the quality control for which the affiliation scheme is designed seldom extends beyond the review of curricula and moderation of examination results into the domain of research.

UNZA's Strategic Plan (2008–2012) focused on the theme of "Restoring Excellence in Teaching, Research and Public Service." A key strategic objective towards that end was that the university should strengthen its human and financial capacities for producing quality research by the end of 2012. The following strategies were identified as means for attaining that objective:

(a) improving the research competences of academic and research staff;

(b) increasing the participation of junior staff in research activities;

(c) strengthening the financial base of research programs; and

(d) promoting collaborative research with other institutions within and outside the region.

Thus the university was very receptive to the proposal in 2010 for Finnish support to establish CAPOLSA as a collaborative project. CAPOLSA combined a capacity-building agenda (postgraduate training) and a felt need of the Zambian government for policy-oriented research and development in a priority field of public education (promotion of universal basic literacy) with an emerging program of international research collaboration (i.e., optimizing conditions for initial literacy acquisition). The Psychology Department in the School of Humanities and Social Sciences was established when UNZA was founded and continues to hold one of the School's strongest records of published research, particularly in the field of human behavioral development. Thus, the department was an ideal base for CAPOLSA. From 1967 to 1989, the department housed the Human Development Research Unit (HDRU), which, as stated by Heron in an unpublished document cited by Serpell, 1982, was formed with the explicit goal of generating scientific data on children's development that could form the basis for teaching developmental and educational psychology at Zambia's newly established university. HDRU achieved international recognition for its output, much of which was published in peer-reviewed international journals (e.g., Deregowski, 1968, 1972; Serpell, 1969, 1982). In the 1980s, several scholars in the Psychology Department provided technical support to the Government's multisectoral National Campaign to Reach Disabled Children, which aimed to lay the foundations of nationwide health and education services for disabled children (Serpell & Jere-Folotiya, 2011; Serpell, Nabuzoka, Ng'andu, & Sinyangwe, 1988).

Along with other UNZA scholars, researchers in the Psychology Department also contributed to the national educational reforms debate (1975–77) and submitted a formal proposal to reintroduce seven of the indigenous languages as instructional media within the early grades (1–4). Theoretical and empirical research across many different nations and speech communities has shown fairly consistently that initial literacy instruction is more effective if it is offered in a child's mother tongue or first/dominant language (Cummins, 2000; Heugh, 2000), and the limited amount of empirical research on the subject in Zambia supported, and continues to support, that position. But, UNZA's proposal was rejected by the Ministry in its final policy document (Serpell, 1978), and the policy of teaching initial literacy in English remained in place for another 20 years. However, in 1996, the Government published a landmark policy document, *Educating our Future*, stating that "all pupils will be given an opportunity to learn initial basic skills of reading and writing in a local language" (Government of the Republic of Zambia [GRZ], 1996, p.40). Over the next decade, systematic field testing by the Ministry, with the support of international consultants and UNZA staff (Tambulukani, Sampa, Musuku, &

Linehan, 2001), led to the formalization of a new initial literacy curriculum and instruction policy by the turn of the century and, still more recently, a strengthened commitment to the use of indigenous languages as media of early-grade instruction. This has greatly facilitated cooperative communication between CAPOLSA and the Ministry of Education.

WORKING RELATIONS BETWEEN UNZA AND ZAMBIA'S MINISTRY OF EDUCATION

Despite UNZA's history of conducting rigorous research on educational topics and providing technical support to a number of important educational initiatives, the Zambian government, like many others in the region, often overlooked the potential value of its local expertise when entering into international agreements for strengthening the nation's programs for education provision. For instance, a multimillion dollar program funded by the World Bank (2007), the Basic Education Sub-Sector Investment Program (1999–2001), relied heavily on international experts to advise on its design and implementation, with only minimal participation by scholars based at Zambia's national university.

More recently, the United States Agency for International Development (USAID) entered into a substantially funded agreement with the Zambian government to launch a new initiative in the field of early literacy instruction (Read to Succeed), much of which is being implemented through subcontracts with various US-based consulting agencies (including Research Triangle Institute/RTI International, Creative Associates, and O'Brien Associates) that have engaged their own expert personnel rather than building an institutional link with a Zambian university. As a result, UNZA's academic staff have provided only piecemeal technical support for the initiative through consultancies on specific aspects of the program.

One such contribution was initiated by CAPOLSA in relation to the assessment of Zambian children's early literacy skills development. RTI International developed a system for designing rapid surveys of the prevailing literacy levels in the early school grades of various countries around the world. This Early Grade Reading Assessment (EGRA) was applied in Zambia in 2012 to generate baseline data against which the impact of the Read to Succeed initiative could be measured in subsequent years. CAPOLSA entered into an agreement with the Read to Succeed organizers whereby some student research assistants recruited and trained in assessment techniques within the RESUZ project in 2011 would be engaged and trained by the Read to Succeed personnel to administer the Zambian EGRA to samples of Grade 2 and Grade 3 children selected for their baseline study. These examiners then administered the same test battery to children who had participated in the RESUZ project in 2011, when they were in Grade 1.

This mutually beneficial agreement provided the Read to Succeed project with a pool of excellent trainees experienced in testing young children and enabled the RESUZ research team to collect longitudinal follow-up data in Grade 2 on a sample of the cohort whose initial literacy learning they had documented in Grade 1. Subsequent analyses have generated significant insights for both projects, based on the correlations and contrasts between the RESUZ test scores in Grade 1 and their scores on the EGRA test battery, as well as on cross-sectional comparisons of Grade 2 EGRA scores between the RESUZ urban school children and relevant samples of the Read to Succeed baseline study.

CAPOLSA'S CONTRIBUTION TO THE DEVELOPMENT OF INSTITUTIONAL LINKAGES AND CONSULTATIVE FORUMS

The CAPOLSA Project established from the outset both a Project Board, which provides accountability for the management of activities and budget to the administration of both partner universities, and a high-level multisectoral Advisory Board, which reviews project outcomes and plans and shares ideas about priorities. The Project Board is cochaired by CAPOLSA'S two coordinators, and members include the deans of UNZA's participating schools, the head of UNZA's Psychology Department, and representatives of the Government's Curriculum Development Centre. In addition, three members of UNZA's academic staff who also are enrolled in doctoral study programs within the scope of CAPOLSA's operations and a representative of the Government's Teacher Education Directorate participate as adjunct members of the Board.

The Advisory Board is chaired by UNZA's Vice Chancellor, who is the executive head of the university. Also serving on the board are the Finnish Ambassador to Zambia; chief executives of the UNICEF country office, the National Commission for UNESCO, the National Arts Council, two local publishing houses, the Zambia Institute of Special Education, the USAID Read to Succeed project, and Zambia's Ministry of Education; and senior representatives of the National Broadcasting Corporation, the Ministry's Curriculum Development Centre, and Teacher Education and Specialised Services Directorate. The other members of the board are from UNZA: the deans of the School of Education and the School of Humanities and Social Sciences; the heads of the Departments of Educational Psychology, Sociology, Special Education, and Language and Social Sciences Education; the head of the Zambian Languages section in the Department of Literature and Languages; all professors of African languages; and representatives of the academic staff responsible for teaching courses in literacy and developmental psychology.

At its 2012 and 2013 annual meetings, the Advisory Board received detailed reports on the activities of CAPOLSA (outlined in the CAPOLSA'S Institutional Mandates section, above), discussed their successes and constraints, and offered suggestions for additional, complementary strategies and activities within the scope of CAPOLSA's mandate. In several instances, those deliberations fed into collaborations that have further strengthened CAPOLSA'S integration within UNZA, its partnership with the Ministry, and mutual understanding between CAPOLSA and other stakeholders, such as the Read to Succeed project, the national broadcasting corporation, local publishing houses, and the National Arts Council.

One particular field of endeavor that has proven to be quite challenging is that of orthographic reform. Zambia's indigenous languages all belong to the Bantu group and share many grammatical commonalities in phonology and morphology, as well as a certain amount of root vocabulary. But because of accidents of history in Zambia's missionary and colonial past, these languages were committed to written form in an uncoordinated way, resulting in unnecessary diversity that reflects the variations across standard orthographies of different European languages (Banda, 2008, 2012; Harries, 2007). In a number of cases, this diversity of spelling has resulted in anomalies, such as a given letter of the Roman alphabet representing different sounds in two of the Zambian languages, or even the same language being spelled differently on opposite sides of an international border. Such anomalies pose unnecessary challenges for literacy learners.

A consultative workshop of experts convened by CAPOLSA (see Maumbi & Serpell, 2012, for a report) discussed the best way forward. The collaboration resulted in guidelines for the spelling in CAPOLSA's first edition of Early Grade Readers written in the four most widely spoken Zambian languages: ciNyanja, chiTonga, iciBemba, and siLozi. The rationale for these guidelines has since been articulated in a public education leaflet (Serpell, 2013) and summarized in each of the languages in the Preface of each of the published Readers. The rationale invokes several complementary considerations. The first and most important is simplicity and transparency, for ease of learning by young children. An additional concern is harmony across the different indigenous Zambian languages adopted as the media of initial literacy instruction in Zambian government schools. Facilitating the transfer of literacy skills from one language to another is essential, given the prevalence in Zambian society of geographical mobility and the demand for individual multilingualism. Another, longer term goal is harmonization across the Bantu languages of the South, East, and Central regions of Africa, given the national differences in spelling of cross-border languages. On the other hand, reforms need to ensure the acceptability of new spelling conventions to parents and teachers of children currently enrolled in early grades.

An invited presentation of the rationale was given at a workshop convened in November 2013 by the Bible Society of Zambia, an organization with its own distinctive reasons for wishing to improve the harmonization of Bantu language orthographies. The Ministry of Education's Curriculum Development Centre also was represented at this workshop. Arising from the ensuing discussions, an agreement was reached in 2014 between the Ministry and CAPOLSA to collaborate on a systematic evaluation of stakeholder perceptions and responses to the simplified spelling system adopted by CAPOLSA for the Readers.

CAPOLSA'S COLLABORATIVE ACTIVITIES

CAPOLSA's activities have involved a variety of collaboration types: researcher–teacher collaboration in the conduct of applied educational research under the RESUZ project; public–private partnership in publication of the Readers and in the production of audio–visual educational resources; interdisciplinary theoretical discourse around the process of editing creative texts in Zambian languages to make them "child-friendly"; and multidisciplinary scholarly cooperative communication with creative writers in the design and conduct of the writers' workshops.

The guiding principle in each of these collaborations has been mutually respectful attention to differences in perspective and priority concerns. The RESUZ research team has invested considerable effort in discussing with early-grade teachers how their philosophical and personal interests relate to the effective implementation of GraphoGame technology in their professional work, resulting in reciprocal insights about the challenges of designing an effective application of the GraphoGame within the prevailing conditions in government schools.

Collaborating with a commercial publisher on the production of the Early Grade Readers introduced CAPOLSA to concerns of an economic nature that dominate the pricing of publications in the African region, especially texts in indigenous languages (cf. Edwards & Ngwaru, 2011a, 2011b). It also afforded an opportunity to engage in co-constructive discussions with graphic artists about the portrayal of themes in the stories and poems that highlighted the elusive but important role of "excess meaning" (cf. Reese & Overton, 1970) in

pictorial representation. One audio–visual learning aid produced by CAPOLSA is a musical video that maps the sounds of the alphabet onto various common words in Town Nyanja, the lingua franca of Lusaka. This called for close collaboration with a local media company in which musical and computer-graphic skills and creativity of its personnel were deployed in response to tightly focused guidance from the CAPOLSA team, to ensure compliance with principles derived from linguistics and psychology.

The educational policy of delivering initial literacy instruction in the indigenous Bantu languages reflects more than just the instructional logic of grounding the learning task in a medium that builds on children's existing oral language competence. The languages familiar to Zambian children entering Grade 1 are part of a broader cultural heritage informing their socialization at home. Thus acknowledging the cognitive potential of those languages as media for promoting communicative competence is linked to a broader sociopolitical agenda of building bridges of understanding and cooperation between the public schools and the communities they aspire to serve. From that perspective, CAPOLSA's workshops for writers in the Zambian languages can be understood as opportunities to promote a renaissance of indigenous literature. Therefore, the evaluation criteria for editorial appraisal and refinement of original texts for publication as educational resources needs to be sensitive to aesthetic and ethical considerations identified within the humanistic disciplines as well as to the cognitive and socioemotional factors emphasized in developmental psychology. Collaboration among literary, linguistic, and psychological scholars in the design and delivery of the workshops has highlighted the diversity of stakeholder perspectives on problems of educational practice and thus has broadened the range of CAPOLSA's interests.

GROWTH POINTS

Certain areas within the broad mandate set for CAPOLSA at its inception have especially rich potential for making a valuable contribution to the achievement of higher order goals, such as egalitarian distribution of resources and respect for evidence. The initial impetus of CAPOLSA's efforts was somewhat narrowly focused on practical matters, such as recruitment of linguistic experts to handle translation, securing authorization to implement research plans, and explaining technical aspects of initial literacy learning to teachers. However, the process of performing those tasks has contributed to our understanding of much broader challenges, and the success with which CAPOLSA manages to address them may carry the greatest weight in determining its long-term impact.

The project's successful negotiation of institutional support in the form of complementary resources from the Department of Psychology and the School of Humanities and Social Sciences may serve to inform future efforts to maintain continuity in projects launched at UNZA with external funding. Looking ahead, we hope to see this complemented by the incorporation of key CAPOLSA positions into the university's mainstream staff establishment. The selection and editing of texts for inclusion in the Early Grade Readers, the articulation of principles for orthographic reform, and the design and implementation of the writers' workshops have all necessitated interdisciplinary communication and collaboration. The mutual enlightenment this has delivered may inspire future scholars at UNZA to step out of their

departmental "silos" and cross the barriers that so often impede the generation of new and relevant knowledge (cf. International Dialogue on Education-Berlin, 2011).

Two-way communication between policymakers and researchers also has been essential to CAPOLSA's efforts to explore ways of improving the fit between its products and the pre-existing curriculum and teaching practices of Zambian schools, as well as the affordability in taking those products to scale. The collaboration envisaged between the Government and the university in conducting a systematic evaluation of how CAPOLSA's innovations are perceived by multiple stakeholders may help to pave the way for the adoption of evidence-based practices and policies and thus the growth of a knowledge society in Zambia.

The scientific focus of the RESUZ project has afforded a structured opportunity for a group of five Zambian nationals to develop and implement research plans leading towards the completion of a doctoral degree. Their certification as experts will contribute in its own right to the building of national human resource capacity. An even more significant outcome may be their active participation in the international collaborative generation of knowledge. They have embarked on the transition from studentship to scholarship by presenting their research plans and findings at international scholarly conferences of the International Society for the Study of Behavioural Development in 2012–2014, the Society for Research in Child Development in 2013, the Society for the Scientific Study of Reading in 2013, the 2012 International Congress of Psychology, the 2013 European Congress of Psychology, and the 2013 Eastern Africa Regional Conference of Psychology. Moreover, they have coauthored, with their supervisors papers for publication in international, peer-reviewed journals, and, increasingly, they are single authors or lead authors of multiple-authored research reports.

Another related growth point of CAPOLSA's activities is multinational collaboration in the African region. The University of Jyväskylä has engaged other early-career scholars in Kenya, Namibia, and Tanzania in the field testing of the Grapholearning technology through study sponsorship, regional workshops, and technical support in the field of statistical data analysis. Coming together within the region has enabled a growing network of early-career African scholars to benefit from exposure to one another's research processes and outcomes. The comradeship emerging from that shared learning holds the potential for creating a sustainable community of researchers whose collective efforts will increase the scale of Africa's contribution to international knowledge. Perhaps more importantly, it may begin to redress the imbalance that currently tends to perpetuate dependency of the region on external technical support and the brain drain of African intellectuals to work in more affluent countries abroad (cf. Lututala, 2012). CAPOLSA's mandate includes the coordination and support of such regional collaboration on the many challenges facing the promotion of literacy that are shared among countries in the region.

EVIDENCE-BASED PLANNING AT THE INTERFACE BETWEEN HUMANS AND TECHNOLOGY

Innovations in ICTs have received a great deal of attention in recent years in scientific, economic, and administrative circles, due to their conspicuous potential to increase efficiency. The impact of ICTs on democratization has been a more contested area. Some advocates have celebrated the role of the Internet in holding powerful agencies, such as state

governments and private corporations, accountable to the general public. Others, more critical, warn that the growing "digital divide" threatens to exacerbate the marginalization of historically disadvantaged countries, sectors, and communities. Ideally, the introduction of ICTs into mainstream education may serve to mitigate that threat, by including an increasing proportion of the world's citizens in the community of distance communicators and empowering them to make their voices heard.

One benefit of the RESUZ project's focus on testing sharply defined hypotheses has been to conform to the rigorous criteria for scientific evidence favored by many advocates of "evidence-based" policies and practices. The currently widespread enthusiasm for randomized control trials as a "gold standard" for establishing reliable evidence is rooted in the paradigm of controlled experimentation that underpins many of the most remarkable advances in the natural sciences. However, the importance of ecological validity highlighted by behavioral scientists, such as Bronfenbrenner (1979), has alerted design-based implementation researchers to the danger of introducing so many environmental controls into the design of interventions that the statistically significant findings have little or no relevance in the conditions that prevail in the real world. Rather than construing the impoverished and often chaotic conditions in government primary schools as extraneous, incidental features to be controlled, the RESUZ team tried either to randomize the influence of these conditions on children's learning or, alternately, to systematically examine it. CAPOLSA is likewise seeking to engage with the economic and administrative constraints currently faced by the public school system, by inviting teachers to collaborate actively with researchers in designing optimal ways of deploying GraphoGame and other educational resources in their classrooms.

One theoretical framework that seeks to explain the conditions that support or frustrate the successful implementation of scientifically designed intervention in the real world is the developmental work research (DWR) perspective developed by Yrjö Engeström (2007). The framework is built upon the cultural–historical activity theory that emanates from ideas first propounded by Vygotsky, Leontiev, and Luria. In a recent report of an international cooperation project focused on promoting ICTs as a resource in Botswana, Ritva Engeström and colleagues (2014, p. 130) affirm that the developmental work research framework explicitly sought to distance the project from "top-down bias and limitations of direct transfer of models and practices from more economically developed countries to developing ones" by "empower[ing] local actors to manage, for themselves, the collective transformation processes involved." Yet, disappointingly, the authors concluded that, in their project, "the view from below captured concrete disturbances but it did not generate ideas productive in solving ICT implementation problems" (Engeström et al., 2014, p. 143).

A notable oversight at the inception of this politically sensitive North–South collaboration appears to have been the importance of "buy-in" to the project's agenda by national, sectoral, and institutional authorities. Reflecting on its limited impact, the authors concluded that "policy analysis or what comes from the top should be taken into consideration within DWR methodology in approaching changes. This observation also includes analyzing the relationship between the new learning activity and the organizational vision of policy makers" (Engeström et al, 2014, p. 143). As I have noted elsewhere (Serpell, 1999), even when policymakers or practitioners explicitly aspire to follow the implications of research, programs in the real world tend to deviate in a number of ways from the precise implications of any given theoretical model. The authors of such models often attribute such deviations to either insufficient

understanding of theory or eclecticism. But, as explained by Korten,(1980), organizational adaptability may be a necessary pragmatic requirement of scaling up a model that works well in one particular location into a general cultural practice sustained by public policy.

In Zambia, CAPOLSA is currently able to invoke national policy (GRZ, 2013) to legitimize its emphasis on the indigenous Bantu languages, despite contrary pressures from a powerful local elite (Williams, 2013) and resistance from various international corporations (Rassool, 2013). Nevertheless, in the longer term, it is possible that larger scale social processes, such as class formation and economic globalization, will constrain the current national movement to acknowledge the intrinsic cultural value of the local languages. CAPOLSA's advocacy for their validation is grounded in appraisal of the current sociolinguistic environment and in relatively universal scientific principles of cognition, learning, and child development.

The asymmetry in global distribution of resources for the design and propagation of new technology implies a danger that the parameters that receive most attention may reflect sociocultural priorities of the world's more affluent nations, and designs responsive to those priorities may be imposed in hegemonic fashion on poorer societies under the guise of "development assistance" and "modernization." In this regard, CAPOLSA's approach to North–South cooperation has been to foster cooperative communication and co-constructive collaboration at all levels, from hands-on instruction, curriculum development, and teacher training to scientific research and policy formulation. In this way, when technological inventions originating in the global North are appropriated in the South, they are mediated by modes of participation that prioritize systematic adaptation to local human needs.

ENDNOTES

1. GraphoGame is the registered trademark of the University of Jyväskylä and Niilo Mäki Foundation. More information can be found at https://graphogame.com/

2. Consult www.sacmeq.org for more information.

3. More information on CAPOLSA is available on the University of Zambia's Website (www.unza.zm), listed under the School of Humanities and Social Sciences and the Department of Psychology.

4. A training program for teacher educators from four African countries (Zambia, Kenya, Namibia, and Tanzania) was launched by the Niilo Mäki Institute in 2012 and is funded by the Finnish Ministry of Foreign Affairs. The focus of the GraphoLearning Diploma Program is to offer teacher educators the latest scientific knowledge and best practices on teaching and on the process of learning to read. Through this diploma program, trainees also familiarize themselves with the GraphoGame and how it can be used to support reading skills.

5. The URL for ResearchGate is www.researchgate.net

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