

Matthew Reeves

The Hub-and-Spoke Model is Dead: Meet the “Killer App” Revealing the Glorious Complexity of Education Systems

Education systems are gloriously complex. Within an individual school, headteachers, deputies, teachers, administrative staff, students, school managers and parents interact, collaborate and share resources in dynamic and evolving ways. Within a local education ecosystem, local and national government actors, private sector entities, teacher training colleges, libraries and civil society organisations interact with schools to harness information and resources which impact student experiences and outcomes.

Network analysis has been described as the “killer app” of complexity sciences (Smith, H. A. and McKeen, J. D. 2007., Ramalingham B. 2013.). However, the application of complexity theory to education systems has to-date been limited. Indeed, the term “network” is primarily used to describe delegated authority in the traditional de-centralised hub-and-spoke model where key decisions are made centrally and de-centralised units are responsible for refinement and implementation (Suggett D. 2014.).

The advantages of hub-and-spoke networks are several. Because each spoke is connected to the central hub, information can transfer through the entire network within two-steps. Expertise can be concentrated at the hub and directed efficiently to where it is needed. Moreover, spokes can be added or removed as required.

However, the hub-and-spoke model also has inherent weaknesses. Because the hub plays a role in every single transfer of information or resources, it can act as a bottle neck. Over-reliance on a central hub makes the network highly vulnerable to shocks, such as changes in funding. Furthermore, the centralisation privileges expert knowledge over locally generated or emergent knowledge, and renders the system less likely to engage with non-traditional actors or resources.

In 2016, the Aga Khan Foundation (AKF) partnered with Root Change to analyse the education system in Kwale County, Kenya. AKF had been working to strengthen the education system in Kwale since 2012 under a project called Strengthening Education Systems in East Africa (SESEA) funded by Global Affairs Canada.

Our research effort was driven by two hypotheses. The first hypothesis was that more cohesive internal school support systems are related to better educational outcomes. The second hypothesis was that better external connections into the broader “education system” of public, private and civil society actors, are related to better educational outcomes. The expectation was that a diverse web of high quality connections between school leaders and external support agencies could predict higher performance on student and school achievement in the Kenya Certificate of Primary Education (KCPE) examinations. This expectation is consistent with the SESEA program focus on a Whole School Approach, which recognizes that all aspects of a school community can impact upon student’s wellbeing and performance, and that school resilience, student wellbeing and performance are inextricably linked.

Through the systems analysis process, AKF and Root Change identified 544 different ecosystems actors and 1461 interactions over the preceding 12 months. The findings of this pilot analysis are simultaneously exciting and frustrating, raising as many questions as are answered. However, there is clearly value to be derived from the use of social network mapping tools to understand, analyse and track the evolution of interactions within complex education ecosystems.