

Kung Fu as critical thinking: An ethnographic analysis

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Abstract

This paper offers an alternative view of critical thinking beyond that which stresses student-centered instruction. It draws on participant-observation and interview data collected from a Kung Fu course held at the University of Rwanda to highlight how students use Kung Fu to make decisions in other domains of their lives. Analysis suggests that direct instructional modes facilitate students' independent reasoning and their approaches to problem solving. In exploring how Rwandan students apply Kung Fu, the paper questions whether critical thinking and student-centered activities necessarily go hand-in-hand.

Keywords

Rwanda, Kung Fu, ethnography, critical thinking, China, Africa

Introduction

Critical thinking has received a great deal of attention from scholars and practitioners within the field of education. From Confucius to Socrates to Marie Montessori and beyond, great pedagogues from diverse places and times have helped students approach open-ended, complex questions. Indeed, some of the most powerful skills and techniques an educator can cultivate, in any setting, are students' abilities to reason independently. Extant scholarship on critical thinking focuses on the value of inquiry-based, student-centered activities for facilitating students' independent thinking. But how is this reasoning ability taught? And how do students understand and display it? More specifically, is critical thinking only facilitated through inquiry-based, student-centered activities? Or might critical thinking also be developed in other ways, including through didactic or direct instruction? These questions stimulated us to investigate how, in relation to didactic

and direct modes of instruction; students themselves demonstrate the effects of their education.

The present case study, part of a larger project about the impact of Chinese language and cultural learning on students' educational and post-graduate opportunities, explores how students apply what they learn to new situations. Although examples pertain to the teaching and learning of Kung Fu in Rwanda, the issues are of wider significance in offering insight into how students demonstrate critical thinking skills in relation to direct instruction. Scholarship on Kung Fu aptly focuses on health, fitness, self-defense, concentration, friendship, and physical vitality. However it does not address the issue we examine here: how students reflect on the application of their own learning to problems they face individually.

Conceptual framework and research questions

Three bodies of research are relevant to our study: critical thinking, reflective practice, and embodied learning. An exhaustive review of any one of these literatures is beyond our scope in this article. Instead, we highlight how these works overlap in ways that help to analyse what and how students learn Kung Fu.

The concept of critical thinking carries many connotations. In a recent synthesis of educational, psychological, and philosophical literature on the topic, Swanwick and colleagues (2014) have elucidated that critical thinking 'is concerned with the exchange and development of knowledge through engaging with other perspectives' (p. 161). This definition overlaps with Heijltjes and colleagues (2014), who consider that critical thinking involves rational, reflective, and systematically principled reasoning. As Ennis (2002) puts it, critical thinking is 'reasonable reflective thinking focused on deciding what to believe or to do' (in Lampert 2006, p. 46). While active and open-minded, it is also systematic. Heijltjes, Lampert and many others emphasise that critical thinking thus involves being open to inquiry and having the ability to experiment with new ideas. Thinking is 'critical' when it consists not simply in applying what one knows to action but in thinking about the conditions of the application, and in being able and willing to engage with diverse possibilities.

In connoting a capacity for comparative situational reasoning, critical thinking is related to reflective practice. Reflective practice, as Swanwick et al. (2014) put it, 'consists of inquiry into the processes of one's own learning and consideration of one's engagement with teaching and learning' (p. 161). Reflective practice is an essential aspect of critical thinking; without it, thinking is intrinsically its own

exercise. Typically, reflection and thinking are associated in education studies with cognitive aspects of the mind. However scholars working in a number of other disciplines--most prominently, performance studies, anthropology, and kinesiology - have argued that reflective practice also involves demonstrating knowledge through somatic and semiotic means. In an essay reviewing Efron's (1941) classic study about how people communicate simultaneously through gestures and words, Deidre Sklar (2008) argues that 'human movement' is an 'aspect of bodily knowledge and of thinking itself' (p. 101). Writing about Japanese dance as a form of 'sensational knowledge', Tomi Hahn treats learning as a system of visual and audio cues or signs. These and other works extend the meanings of 'knowing' and 'thinking' to include many aspects of patterned communication. In doing so, they conceptualise reflective practice as a matter of recurrent or repeated technique or exercise. In contrast, a Bourdieusian notion of practice differs from this kinesic school of thought.

Whereas 'practice' from within a kinesic framework regards movement—like thinking—as communication across activity domains, Bourdieusian theory emphasises that practice involves irregular, punctuated activities whereby embodied knowledge is objectified and constitutive of old and new interpretive frames. Bourdieusian theory focuses less on practice as a matter of patterned re-iteration than on analysis of the generative schema that inform the ongoing dialectic of objectification and embodiment of new and old habits and dispositions. 'Practice', as Bourdieusian theory puts it, involves the dialectic of embodied and objectified knowledge, produced through social action (Bourdieu 1977). Repetitive action, when performed by students, is often seen by scholars drawing on Bourdieu as constituting embodied learning (e.g. Mac an Ghail 1994; Middleton 1997). However, when teachers conduct the repetition, educators and scholars frequently regard the pedagogic mode as one involving didactic instruction, where didactic means 'instructional' and 'edifying' and connotes a strong moral disposition (e.g. de Campos Rosario, Stephens & Delamont 2010; Wright 2008).

Taken together, works in all three bodies of literature help us to hypothesise that critical thinking might involve a pedagogic mode or scheme of reflective practice that forces repetitive examination of conditions within which students move forward with their lives. Drawing partly from each literature—focusing on comparative situational reasoning (studies of critical thinking), conceptualising thinking as patterned communication (studies of reflective practice), and considering that practice refers to both the identification of rules and techniques as well as embodied,

practical knowledge (studies of embodied learning)—we question whether critical thinking and open-ended or student-centered instruction necessarily go hand-in-hand. To address this question, we seek to understand the instructional mode used in Kung Fu. We also seek to understand how students experience their Kung Fu lessons and how they apply these lessons to their lives.

Kung Fu in Rwanda

Typically studied as a martial art or a means for improving students' self-confidence and physical agility (Lantz 2002), Kung Fu has long been of interest to people in Rwanda; it has signified the life ways of foreign and different people. Recently, Kung Fu has become more popular in Rwanda as a result of Kung Fu classes offered through the University of Rwanda Confucius Institute. A Chinese master living and working in Kigali teaches enrollees up to five times weekly. The form of Kung Fu taught is Hung Kuen, based on a southern style of Shaolin Kung Fu. Although the specifics of Kung Fu teaching are important for the fuller project of which this is a part, our focus here is on critical thinking and Kung Fu, not on the specifics of Kung Fu practice or of Chinese language and cultural learning in Rwanda. In the following pages we describe first our research methodology and the setting, followed by description of key findings and analysis.

Research methodology and setting

In order to address questions about how students embody and objectify knowledge, data were collected through a combination of participant observation and interview methodology. As Hammersley and Atkinson (2007) elaborate, 'there are distinct advantages in combining participant observation with interviews; in particular, the data from each can be used to illuminate the other' (p. 131). Participation enabled us to understand how students experienced classroom lessons and objectified their experiences in the context of accounts they later offered through interviews. Observations enabled us to document patterns of instructional methods and of students' activities within and across classroom sessions, and to balance our understanding of these patterns with an understanding of students' interview accounts. Interviews permitted us to query students about the significance of Kung Fu for their own lives and to help us discover reasonable manners of interpreting our participatory-observational data in the light of students' own words.

The Kung Fu course ran for four months; Habimana participated in the entire four-month program. He attended and, after class, wrote ethnographic notes of more than thirty classes. He and additional researchers conducted observations across the four-month period, in addition to which researchers conducted more than a dozen interviews with Kung Fu students. Interviews and ethnographic accounts were documented in note form. Interviews followed an open-ended, rather than closed script format. They included discussion about students' previous sports experiences, their reasons for studying Kung Fu, and their reflections on what they were learning and how it applied to their lives. Interviews were conducted in Kinyarwanda, the first language of most people living in Rwanda. Kung Fu classes were conducted mainly in English as English was the primary shared common language of teacher and students. Chinese was also used during classes; consequently students came to understand new Chinese vocabulary across the four-month duration of the course. Prior to conducting the study, research permits were obtained. All participants were told about the aims of the study. They were informed that they could decide to withdraw at any time. All offered their informed consent.

Data for this study were collected from January through April 2014 at the University of Rwanda in an evening class attended by approximately fifteen students and led by one teacher. Classes were held in the gymnasium of the Confucius Institute at the College of Education. Students who enrolled in the class came from different parts of Rwanda. Some were studying at the College of Education within the University of Rwanda. Others were in secondary schools. Still others were adult aged but had not yet finished secondary schooling, perhaps because their families were too poor to pay school fees. More students enrolled in the class (about 25) than completed it (about 15). The teacher was a Certified Kung Fu master living in Rwanda for a period of approximately two years. He was himself a university student from an institution in China, studying a subject related to teacher pedagogy.

Findings

In our presentation of findings, we highlight three kinds of information. The first is a paraphrased vignette of the kinds of instruction that the Kung Fu teacher offers. The second is a story the teacher uses to teach students about Kung Fu history. The third are excerpts from interviews that illustrate how students think about the application of Kung Fu to their lives.

Critical thinking through direct instruction

Most students of Kung Fu practice every day from Monday to Friday between 5.00 pm and 6.00 pm in the gymnasium of the Confucius Institute at the College of Education. Practice begins with kicking, punching, jumping to higher levels, and so on. It requires much effort for students to do these practices. Everyone sweats; most push themselves beyond what seems to be their limits, and a few of the students take the lead in directing others to warm up before their master arrives. When the teacher arrives, students turn their attention to the master. Unlike them, he is dressed in street clothes. Students in contrast are dressed in all white, suggesting that bodily attire creates and reflects qualitative differences between students and the master. The master calls the students to attention and clearly and emphatically tells them what to do. For example, he may command that all students do twenty somersaults or fifty push-ups, or that they work in pairs to undertake a routine or exercise. Even if doing so seems impossibly difficult (as Habimana experienced through participation), students follow the master's requests, seeming to respond unquestioningly to his admonishments that they work hard to improve themselves.

'Technologies of the self,' writes Foucault, are those 'which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality' (Foucault 1988, p. 18). On the face of it, students' activities may seem to enact precisely what Foucault describes, but on closer scrutiny, students' enactments are not so much 'permitted' as 'required' by the master. Rather than instructing through diffused governance technologies, as a Foucauldian framework would conceive, the Kung Fu master uses loud shouts and commands. 'Do this, do that,' he implores, often gesturing forcefully with his body.

For the first ten or twenty minutes of the class, students repeat what the master instructs. They perform what the master says. Then, typically, students sit in a circle toward the far side of the room. The master sits cross-legged in the center. Here, he typically tells them something about Kung Fu or about the effects of what they are practicing. He makes the lesson explicit. He tells students not *what* the lesson means but *that* it will create in them a new and better moral outlook. As a master and someone who has studied Kung Fu for many years, he offers advice through his narrative. For example, on one particular day he offered the following lesson to the students, paraphrased here from Habimana's notes:

Doing Kung Fu is to think and think. To have enough power or be strong does not mean you can win. The first step is to think deeply about what you are going to do, then to choose the appropriate option that could be applicable depending on the qualities and strengths and weaknesses of the person you are engaging or competing with. You have to understand your partner's strengths and weaknesses, to see what is difficult for your partner to do and what is easy for you. Everyone in this world has different strengths and weaknesses. That is the way people are. This is not a judgment. What might seem difficult for your partner may be easy for you and the other way around. Your job is to use your head to think and discover that.

For the master, Kung Fu involves thinking and reasoning. Doing Kung Fu is using thought responsibly and physical action as minimally as possible. The master's instructional mode requires, it would seem, that students develop a comparative, situational approach to thinking about how to apply their knowledge. In this respect, we see his method as encouraging critical thinking in the first way identified above: as 'focused on deciding what to believe or to do' (Ennis 2002 in Lampert 2006, p. 46). But beyond this, and following what Tomie Hahn (2007) has observed about Japanese dancing, we also argue that his approach seems to develop students' 'energetic sensibilities' (p. 41), understood as embodied knowledge or practice that paradoxically is not about movement or practice in the first instance but about reflection. 'To think and think' entails exercising thought. Thought is then projected onto other activity domains and mobilised for ethical considerations.

Discover what is your strength and what is your partner's weakness [the master continues]. When you start fighting, for example, you have to look at your partner's height, to know whether you can use a kick or punch, or whatever technique you might find best ... While you are trying to reach your partner's head, your partner may get to you more quickly, with very little if any effort. Then, your partner can do whatever your partner wants and you will fail automatically, before you choose the best way to win. In assessing your partner, you must think and analyse everything, because most of the time your key to success will be to use your own thinking more than your physical strength. If you use your physical strength alone or more than your thinking, you will fight like a blind person, that is, without seeing but only doing, and you will fail.

The master's words not to 'fight like a blind person' instruct through metaphor. He introduces possibilities and draws students' attention toward practical reasoning. Through metaphor and instruction, he creates parallels between Kung Fu and the 'strengths and weaknesses' students face. He draws connections between Kung Fu

and life. In other words—and in the manner of the third body of literature, above, we suggest—the master’s use of direct instruction and explication introduces new frameworks through which students can begin to reflect on how they think about and approach life. Indeed, the master refers to a ‘danger zone’ that has both literal Kung Fu application and broader meaning:

These differences in relative advantage [of height and strength] will require that you approach your partner uniquely in each setting. Be aware of whether you are in a danger zone, in an area where your partner can control you. If your partner is taller than you and you want to reach his head, be aware that it will take you more time and effort than it will for your partner to reach you.

After establishing a comparison between life and Kung Fu, the master shows students some examples. First he demonstrates a kick or punch in a manner that illustrates his comments. Then he chooses two students and asks them to enter into the middle of the circle. He tells them what position to take, and then he instructs them how to fight. He typically then tells them to hold one aspect of that position in place, while other students observe the interaction. He asks observing students to think about which next move would be the best for both of the fighters. Notably, he instructs students to think about the comparative advantage of each fighter, stressing again that one person’s weakness is another’s opportunity and vice versa. After students offer their own suggestions, he then tells them what is in fact the best option. He also instructs all of the students to undertake the exercise. Students rise and interact in pairs. They all try to defend themselves.

Having first told students about the philosophy of fighting as building on one’s personal strengths, and then having two students demonstrate and the entire group debate performers’ interactions, after which all students perform the task, the master then observes students interacting and analyses what they do. He comments on each student’s performance. He helps them see various options, not only the fastest or most expedient way forward. The master’s mode of instruction—that is, telling students what to do, focusing on particular skills and dispositions, and using examples and demonstrations to focus students’ attention—carries over into the master’s motivational story-telling.

Story and history as sources for critical reflection

Usually, during the second part of the class session, the teacher calls students together for discussion. He tells them stories about China, history, and Kung Fu.

One of the master's stories has to do with the history of Kung Fu. Here is an excerpt, with our commentary, from one lesson:

Kung Fu Shaolin monks practiced Chinese martial arts not just for philosophy or self-defence, but as a way of life intended to benefit them on a physical, mental and spiritual levels. In times of hardship, such as the financial crisis like we are facing now, knowledge about Kung Fu helps students cope with our modern fast-paced lives that lead to stress and anxiety. Such coping mechanisms in turn help us to get resolutions to problems we face in life.

The master sets up connections between the past and present. He then dives more deeply into history:

The legend of the Shaolin temple and its monks was first born around the year 540 AD, when the Indian monk Bodhidharma travelled to China to see the emperor. Bodhidharma introduced to the monks eighteen movements derived from traditional Indian Yoga. These movements were designed to increase students' physical and mental strength as well as the flow of Chi energy. It was these movements that would become Kung Fu as we know it today, after being revised and expanded for nearly 1,500 years.

With an origin story set in place, the master next draws lessons from Kung Fu to tell students what this history means.

Kung Fu is being constantly perfected and built upon over the centuries, creating the vast array of styles and variations that we know today. Although Kung Fu has changed over time and has often become more focused on the 'martial' side of things, the core messages remain the same as what Bodhidharma taught the Shaolin monks. Namely, Kung Fu teaches us how to live in harmony with nature and within ourselves.

One of the components to which students most respond, judging from how they sit up and strain to see and hear the master, concerns animal powers and imagery. Rwandan life is particularly rich with animal symbolism. Snakes, hyenas, and in some contexts primates signify clever, sometimes undesirable dispositions. Tigers and leopards, and other wild cats signify power and prowess. The master's discussion of morality taught through animal styles creates a common ground of understanding.

Over the centuries, monks incorporated many different animal styles into their Kung Fu, many of which are taught. The animal styles became so numerous that the virtues of all animal styles had to be summed up, hence the five animals of Kung Fu. The tiger represents power and ferocity; the crane, speed and fluidity; the snake, speed and

accuracy; the leopard, how to use our heads and to think; the dragon, the mastery of all styles.

The master then explains the significance of mastering these animal styles.

Through mastering the different animal styles, we can achieve a balance in our training: a balance between power and speed, between soft and hard, between ferocity and calmness. This balance is carried forth into our daily lives, helping us to create a perfect harmony between ourselves and others. Kung Fu training thus is designed to not only help us with our self-defence, but to build our fitness, focus, discipline and confidence. Through Kung Fu, we are taught the eight wisdoms. These wisdoms help us in our training and to be successful in everything we do. In other words, Kung Fu doesn't only help us with our physical fitness, it can act as an emotional vent to relieve us of stress and help us to maintain good mental health, ways of thinking, decision-making, finding more options, and choosing the best one.

Typically, Kung Fu sessions wind down with such a narrative, close with a slower exercise to cool students' bodies, and then end with a final but informal farewell between the master and the students.

How students say they apply Kung Fu to their lives

It is important next to indicate and discuss how students themselves reflect upon and apply Kung Fu to their lives. For this we refer to our interview data and to students' commentaries. We do so in order to illustrate how students directly report what they think about their master's words when they approach other problems. What follows are excerpts from interviews with students who are talking about how they began to apply principles associated with Kung Fu to the activities of their lives.

Student 1: When I started Kung Fu my master told me it would give me more energy. He said that through Kung Fu I would be able to achieve anything that I want to do. In the past I used to go collect water every morning before school. I'd carry a 20 litre tin of water with my right arm and sometimes I'd need to shift it to my left arm. Between the river and my home, I'd pause a few times; I'd take a fifteen or twenty minute break in the process of returning home. But because I had to take those breaks, I would always be late for school. But, when I started Kung Fu, I started to have more energy. I would remind myself that, while I was fetching water, my master would tell me to keep going, not to rest. Then I'd push onward. Now, these days, I never arrive late to school. I'm fast in everything I do. Not like before. Before I was lazy, slow and many times I was

late, but now I'm fast. Kung Fu has helped me not just to have energy but to have the discipline to press on when I'm ready to quit.

Student 2: I'm a barber in Kigali. When I was younger, I did not get the chance to continue my studies at university. But that was okay, my job satisfied me. I remember before joining Kung Fu I used to stop working very early because I felt so tired. I would go home early to relax. But since I attended Kung Fu class, I have started working more hours than before; this is because my Kung Fu master always tells us that we have to continue no matter how we feel. When we are doing a difficult practice, the master orders us to continue. At the beginning of the course, very few students could do that. Kung Fu is difficult to do, but our master reminds us that nothing is difficult if we put our minds to it. So, from him I have learned how to persevere. Now I do not get tired, I am motivated, I keep working, and I do not see any obstacles. I have even started to earn some additional wages because now I can work longer and harder than I used to before Kung Fu.

Student 3: As a result of Kung Fu I have begun to think carefully and strategically about what I do. I consider the best option and I develop a plan. I now am more daring, and I have more confidence. For example, I dare to stand up against some thing. I now squarely face problems my problems. I did not dare before. Another thing I have learned from Kung Fu is conflict resolution. I was living with my colleagues; we studied together at the University of Rwanda, College of Education. There were several of us. Sometimes we faced problems of misunderstanding. But I was first to address these problems because I have learned from Kung Fu how to approach difficult matters and think about how to address or resolve them. One of the Kung Fu principles is to use as little strength as one can to overcome obstacles. I have even been able to apply this to my economic problems. Generally speaking, I am poor, but I use my money wisely and frugally. I do not spend more money than I have.

As these interviews begin to illustrate, students, too, think about how to transfer Kung Fu into their everyday lives. They reason comparatively across social activities, and they generalise principles for everyday action from their Kung Fu lessons. They say that they now consider more than one option to solve a problem; and they say that they now think deeply about what they are going to do.

On the face of it, it might seem that students' accounts at times resemble religious conversion testimonies. 'I heard the voice of my master telling me that I have to continue, not to rest,' one student conveys. The other notes, 'I must do what the master says.' Certainly, as mentioned above, Kung Fu renders explicit the challenges of ordinary life and implores students to 'think and think' as a method of discerning

right from wrong. Yet to equate Kung Fu learning to religious conversion runs counter to what these students see as a difference between the two. Kung Fu classes are not like church, students indicate in their classroom interactions. In church, one comes and goes as one pleases. Participation is voluntary. Here, if one attends Kung Fu class, one must live and work by Kung Fu rules.

Even though they learn from him, students do not blindly accept all that the master wants them to do. Indeed, behind the master's back and often in Kinyarwanda, a language the master does not speak, students sometimes mock *not* the master directly, as a person, but some aspects of Chinese culture. They put themselves and their own priorities above those of the Kung Fu class, particularly when their jobs and employers require that they miss a session. When this happens, students aver and avoid telling the master where they have been, all the while discussing amongst themselves in Kinyarwanda that even the master should understand that work and Kung Fu go hand-in-hand. Thus, theirs is not a wholesale adoption of the master's demands or of an externally imposed belief but rather a selective and reflective application of Kung Fu to their lives.

Discussion

Participant observation and interview data raise three points of particular interest here. First, in contrast to a literature that typically conceptualises critical thinking as a matter of 'engaging with other perspectives' (Swanwick et al. 2014, p. 161), our findings suggest that under some circumstances, direct or didactic instruction—particularly when it demands reflection—may foster critical thinking and discernment. Students in our study express a reflective awareness of their learning. They stop and think before they act; they imagine the best scenario from a range of options. They do not necessarily engage with other perspectives, though they certainly are taught to imagine opponents' positions.

The fact that other persons are regarded as opponents also carries some consideration for our second observation: that the kind of 'knowing' and 'thinking' students are taught and say they learn seems to be patterned through interactions framed around strengths and weaknesses, including that of a strong master to a questioning, reactive student. Kung Fu lessons and problems of life are seen as transposable, metaphorical. The teacher-to-student form of instruction involves a nested set of dyadic relations and teaching strategies: telling students what to do, focusing on particular skills and dispositions, and using examples and demonstration to focus students' attention. Direct instruction in this context seems

not to be a simple mode; it also seems to involve connected and complex strategies. Yet its cultural framing of knowledge around the concepts of danger zone and control of one's self and one's opponents suggests that there exist cultural parameters to critical thinking and its transfer that differ from historically western approaches.

Third, the above observations begin to suggest that critical thinking might involve a mode or scheme of reflective practice that *forces* repetitive examination. The master's direct instruction seems specifically to require, even demand, students to think about what they do, yet never to openly question him. Direct demand of reflective learning is paradoxical, especially when seen from within some traditions that prioritise open-ended questioning, including of authority, and a student-centered and exploratory approach to critical thinking.

To put all of this together, then, participant-observational and interview data suggest that students, too, like their master, develop and use a language that speaks about their competitors' positions. Students' recognition in the Rwanda Confucius Institute that some people have more or less strength and advantage seems to indicate—though our findings are preliminary—that Kung Fu may provide one possible means for students both to think critically and to employ a language that articulates and analyses comparative differences.

Conclusion

Having set out to understand the method of teaching used in Kung Fu and to examine whether that method might foster students' critical reflection, we conclude that the instructor uses a complex form of direct instruction. Paradoxically, however, his mode requires, even forces, students to 'think about thinking'. This mode of thinking is both embodied and articulated but is directly projected from teacher to student. Students transpose it onto other domains of life, including onto their thinking about conflict resolution, time management, employment, and how they can develop comparative advantage given their circumstances.

Because so much of Kung Fu is teacher-led and teacher-driven, and in view that students too report, via interviews, that the master's teaching drives their thinking, this work raises the logical possibility that—contrary to what is often reported—critical thinking and student-centered activities may not necessarily go hand-in-hand. More empirical investigation would strengthen this conclusion, however, which currently rests on inference from our data. In particular, further research

might examine how exactly students at the micro-phenomenological level internalise and then operationalise the master's lessons and use Kung Fu to push beyond physical and mental barriers through the use of inner dialogue. Such research could help to create an even more ethnographically rich picture and model of how direct instruction might foster critical thinking in Rwanda and elsewhere.

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