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Mathematics and Mathematics Education Research Seminar

The Teachers Paradox

Speakers: Prof. Baker William and Prof. Olen Dias

DEC 04, Tuesday at 3:30 PM in B441

This paradox has been expressed clearly in three different math educational settings. First, in concept development Vygotsky states that it is futile to teach children a new concept, the teacher who tries to do this ends up with empty verbalizations. Second, in that branch of concept development focused on schema theory constructivist will say that while you can teach any concept or actions that assimilate into existing schema you cannot teach concepts-actions that students do not have a schema to assimilate such information. Thus accommodation can only occur through active student engagement in the problem solving process, watching the teacher model the problem is not enough. Third, in creativity theory it is said that a teacher can ask, require and even demand student creativity but cannot make student create anything.

This paradox can be elaborated through the concept of internalization understood as the process by which students create meaning for themselves of what is previously seen as an external phenomenon or reality. As a teacher we pose problems and scaffold student solutions by providing feedback, encouragement and hints this social scaffolding is meant to help student internalize the concepts that underlie the solution activity. Teachers are well aware that there is a difference between social internalization and individual internalization, this is epitomized by the 'next day effect' in which the classis bored doing problems on Monday that they have no clue about how to do on Tuesday. That is when a scaffold sequence of problems induces certain concepts and actions that are understood by the class that day but for which they cannot employ without that background the next day.

Teachers are also aware of the inverse relationship between scaffolding individual internalization thus the more sequenced the problem set and the more hints given by the teacher the less students can demonstrate mastery independently.

What do teachers do?

- *Spiral method of lesson presentation – problem posing over more than one lesson*
- *Class discussion that focuses on student reasoning specifically the reasoning behind their insights*
- *Follow student insight where does it lead Make sure student feel heard*
- *Compare different methods that are inspired by student insight with the method you as teacher prefer (book method etc)*
- *Problems that challenge –what does this mean?*

***** Light refreshments will be served sponsored by the math club *****

For any questions, please contact Tanvir Prince at tprince@hostos.cuny.edu

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