Editorial from Bronislaw Czarnocha

Mathematics Teaching-Research in the time of Covid19: Difficulties and Possibilities

COVID 19 is constantly on our minds to larger or smaller degree and investigations into student performance as well as learning mathematics during the pandemic are important to determine the best course of action. It is becoming clear that changes in pedagogy required from us by the pandemic will be substantial if we want to engage all possible available routes of e-learning. A bisociative frame is created between the past pedagogy and new circumstances, the structural frame, which is a prerequisite to creativity of Aha! Moment. Thus it is our own classroom creativity that is called here for engagement.

We start the issue with the work of Ariyanti and Santoso from Indonesia who inform about a simple yet statistically rigorous comparison of student work before and after Pandemic. Their results definitely demonstrate lowering of student achievement during the Covid19 distance learning.

We follow that analysis with the work of Baker and his colleagues in the Bronx who investigate the impact of COVID 19 restrictions upon the facilitation of creativity of Aha!Moment. Baker et al are using this occasion to lay the short background of the methodology of facilitation and assessment of the depth of creativity. They show that the characterization of Aha!Moment by three criteria of: search, connection and resulting novel process do a good job in the analysis of the depth of creativity within Aha!Moment.

They report that the main impact of the distance learning on the facilitation process is in the constraints upon interaction between students as well as upon student/teacher interaction created by the online approach. Since such an interaction is essential for the creativity facilitation process, one can expect lowering of the level of creativity in the mathematics classrooms.

The third article in the Covid series by Fuchs and Tsaganea provides multidimensional analysis of the COVID impact upon teaching in NYC as well as in the whole country. They discover quite a few advantages of online teaching in relation to the limitations of face-to-face teaching, which nonetheless has been seen as the best pedagogical method. However, they point out that the
societal changes due to COVID will stay with us much longer and they urge educators and students to develop mastery of online teaching and learning.

We supplement these three COVID related papers by the interesting paper of Stokes and Sanfratello, which although written before the pandemic struck, nonetheless offers an interesting pedagogy of “learning through doing”, that eliminates math anxiety. As the long term effects of the pandemic upon learning are still unknown the experiential approach based on patterns and deliberate practice while grounded in the problem solving model of creativity/innovation offers the pathway of success for those students who have experienced higher levels of math anxiety in new online learning circumstances.

We complete this issue with two papers analyzing classroom effectiveness of two geometrical software, Geogebra and Geometer Sketchpad. At present, geometrical oriented mathematical software might be very useful in contemporary online mathematical classrooms. It can provide mediating visual pathway between the student and the teacher while increasing and deepening their interaction.

Raj Joshi and Singh from Nepal demonstrate high effectiveness of Geogebra for learning linear equation through the simple experimental group/control group investigation. They point out to the versality of Geogebra to teaching variety of mathematical domains from arithmetic to calculus; it could be especially useful for distance learning.

The paper of Hartono from Indonesia investigates effectiveness of Geometer Sketchpad (GSP) in guiding student understanding of two dimensional objects. The author describes three months long teaching experiment comparing student (7th grade) achievement between two cohorts, experimental with GSP software, and control with traditional learning. The positive result of the teaching experiment needs to be repeated during pandemic, however it’s clear that both geometrical software can positively impact mathematics learning and teaching during that critical time.

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