

**Title of Session:** Math Resources K-20 - LOGO

**Moderator:** Jeff Cooper and David Weksler

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Room: Math Resources Group

**DavidWe:** Hi there. Welcome to the K-20 math resources discussion

**BjB:** we usually start all Tapped In discussions with introductions

**BjB:** can you please tell us where you are located and what you teach or hope to teach?

**DavidWe:** So, I'm David Weksler. I'm in New Jersey and I help teachers learn more about educational technology, especially math teachers. I lead a math education and technology discussion later in the month

**ShannonU:** Houston, middle school math

**MarthaED:** I'm located near Houston and plan to teach 4th-8th Math

**DavidWe** runs back to the kitchen, briefly

**TessaKW:** I am located in the D.C. area. I teach 4th grade at a school in Silver Spring, MD

**JessicaGH:** My name is Jessica and I am in Houston, TX. I am student teaching 6th grade Math right now.

**KatheriGst8:** Hi I'm Katherine I am a student teacher in Kingwood and I am teaching 8th grade math. I hope to teach middle school math.

**ChrisC:** Hey Bj: Chris here. Computer Teacher, not math teacher, looking for suggestions in helping our Math department use Palm PDAs.

**TessaKW:** oh, my name is Tessa

**DavidWe:** Welcome to you all...

**DavidWe:** We HAD planned to discuss LOGO, the computer programming language designed for young people as a number of people last week wanted to know more, but...

**DavidWe:** Do you guys have any interest in LOGO in particular, or something else?

**DavidWe:** One of my colleagues should be logging in at some point - he's a GREAT LOGO enthusiast

**JessicaGH:** I am not sure what LOGO is, but I would love to find out

**TessaKW:** I have actually never been in here before, so I am interested in the whole idea here

**DavidWe:** Welcome, Tessa.

**MarthaED:** Me too!

**KatheriGst8:** I'm with Jessica on this

**ChrisC:** oops... didn't see the topic. Don't know LOGO

**DavidWe:** Jeff is the nominal leader of this discussion, but it looks as though he's rescuing his children from some after school activity in Oregon

**TessaKW:** What is LOGO?

**DavidWe:** No problem for those of you who don't know LOGO...that's easily fixed

**DavidWe:** LOGO is a programming language, largely credited to Seymour Papert (at MIT) that was very accessible to young children

**DavidWe:** The program initially made a large, robotic TURTLE, move around - with simple directions

**KatheriGst8:** yes I've seen that

**KatheriGst8:** that was a loooong time ago though have there been changes in the programming

**DavidWe:** This is the current version of LOGO which does a lot of stuff - it's called MicroWorlds

**DavidWe:** <http://www.microworlds.com/>

**DavidWe:** MicroWorlds is a pretty full-blown multi-media program that can let students do all sorts of things

**TessaKW:** so far it looks cute

**DavidWe:** LOGO appeals to folks who are interested in Constructivist activities - students BUILDING their own learning

**DavidWe:** There are also a number of versions of LOGO, some with specific modules for teaching elementary geometry, etc.

**JessicaGH:** So the students go through the program at their own pace?

**DavidWe:** Much of it is now included as explorations that come with various math curricula. Anyone use the Explorations (TERC) elementary curriculum for math?

**DavidWe:** Well, there are activities that I think a teacher would encourage the students to work on

**DavidWe:** It's like a word processor, in a sense, Jessica...

**JessicaGH:** Cool

**DavidWe:** It's a tool - you can write things with a word processor - you can learn simple programming as well as mathematics with LOGO and its upgrades

**DavidWe:** Yes, it is very cool, although for some folks it was popular in the 80s and then it lost its appeal

**DavidWe:** . o O ( I don't know exactly why )

**TessaKW:** you said it includes geometry though, is there a lot of drawing in here too?

**DavidWe:** Drawing a square became easier...writing a routine to draw a square (the turtle would make 4 right turns to make a square) seemed anachronistic

**DavidWe:** You make the turtle (the icon, essentially) draw lines - make shapes - you have to TELL it what to do

**ShannonU:** That is so neat

**ShannonU:** This would really motivate students

**TessaKW:** oh so it works on writing a set of directions at the same time as working on math?

**DavidWe:** There is other software that does that, but LOGO does teach kids to think, how to make the turtle move, how to make an elegant program, fewer steps, etc.

**DavidWe:** Yes, Tessa. Exactly

**DavidWe:** wishes his LOGO experts were here, but hopes they will show up

**DavidWe:** Anyone use software for math instruction at the moment?

**ShannonU:** yes

**KatheriGst8:** yes a little

**JessicaGH:** yes, Understanding Math

**ShannonU:** geometers sketchpad

**ShannonU:** Larsons

**MarthaED:** No, but would like to incorporate some.

**DungN:** no

**ShannonU:** lots of drill and practice

**KatheriGst8:** understanding math

**MarthaED:** Same here.

**TessaKW:** I use mostly what I can find online, but I go through Harcourt too, that is our math curriculum

**ShannonU:** I would like more hands on stuff like how LOGO sounds

**ShannonU:** Marco Polo is a good resource also

**TessaKW:** I would like to know a bit about some of these other programs too

**DungN:** me too

**ShannonU:** Marco Polo is online and has so many different things to offer

**ShannonU:** games, lesson plans, etc.

**JessicaGH:** Understanding Math has activities students work through. It is very interactive and the students can work at their own pace.

**SusanR** joined the room.

**DungN:** where do you find those lessons?

**KatheriGst8:** I'm using it to teach probability

**DavidWe:** That's great

**JessicaGH:** The students seem to love it, although it is very expensive

**DavidWe:** Let me share with you a web page that has some nice activities, related to LOGO

**DavidWe:** <http://mathforum.org/clime/microworlds/>

**SusanR** waves

**MarthaED:** Thank you for that information.

**DavidWe:** My friend and colleague, Ihor Charischak - hi Susan - started a group called "CLIME"

**IhorC** joined the room.

**DavidWe** . o O ( CLIME == Council for Logo in Mathematics education )

**DavidWe:** Hey, what timing!!

**DavidWe:** Ihor, say hello

**DavidWe:** <http://mathforum.org/clime/microworlds/>

**SusanR:** three cheers for LOGO

**DavidWe:** Just showed folks this

**ShannonU:** [http://www.marcopolosearch.org/MPSearch/Basic\\_Search.asp](http://www.marcopolosearch.org/MPSearch/Basic_Search.asp). is another good website

**DavidWe:** Susan, would you like to say a bit about how you have used LOGO?

**SusanR:** I used it in its infancy when it was Terrapin Logo ..endorsed by Seymour Papert in Mindstorms

**SusanR:** I also used it along with Turtle Geometry with Apple Logo..of course I probably have not touched it for about 5 years

**DavidWe:** What did you do with it, Susan. What age students?

**SusanR:** grade 6 to 8 students...mainly using it to strengthen math concepts

**DavidWe:** And the students would learn some programming, as well, right?

**IhorC:** I'm here but need a few minutes.....

**SusanR:** yes, programming

**DavidWe** encourages Ihor to take his time

**KatheriGst8:** I don't understand how this programming can be used to strengthen math concepts exactly what does this LOGO do?

**SusanR:** it's now used to drive simple robots in the elementary school

**ShannonU:** Is it used for Robotics

**ShannonU:** the program

**DavidWe:** So, part of what LOGO fits into is what Ihor has called the "Dynamic Classroom" which incorporates software for doing things (like spreadsheets) that are essentially mathematical in nature and the software often adds an extra dimension to things

**DavidWe:** Can you give Katherine an answer, Susan...I'm thinking of one

**SusanR:** this may help with the explanation <http://el.media.mit.edu/logo-foundation/logo/index.html>

**TessaKW:** how kid friendly is this? Would it work for 4th grade? It seems like it might be over most of my students' heads

**SusanR:** I can vouch for Logo...it cleared up a lot of my math problems....poor math results in high school

**DavidWe:** I think you are the best judge of your students, Tessa. But I know that teachers have used it in earlier grades than 4th

**JessicaGH:** So the students use it mainly for programming; however, they strengthen their math skills along the way?

**DavidWe:** Part of the challenge for teachers with all this technology is to feel comfortable with it themselves

**DungN:** all these are for higher grade level?

**DavidWe:** You don't typically get a workshop on "How to use the chalk" - it comes naturally

**DavidWe:** If you haven't used math software yourself, and haven't learned about teaching with it, then it is MUCH MORE challenging

**DavidWe:** No, Dung, much of this is accessible in elementary school, too

**SusanR:** one more link please David to reiterate <http://www.papert.org/>

**ShannonU:** Does the LOGO company do trainings in schools?

**DungN:** are any of these are for K level?

**MarthaED:** It's worth looking into a little deeper.

**DavidWe:** Obviously to bring this into your classroom takes time, practice and support

**DavidWe:** Some of us find it amazing that a lot of young teachers coming out of school today are not learning about a lot of the technology that IS available for teaching at ALL levels

**DavidWe** has an interesting quote to share, but he needs to find it

**ShannonU:** I know that some software companies do trainings on how to effectively use the software, does this company do it?

**SusanR:** I spent 3 or 4 years using Logo before experimenting in the classroom

**DavidWe:** Do any of you use Spreadsheets in your math instruction?

**IhorC:** The best site for finding a lot about the current state of Logo is <http://mathcats.com>

**KatheriGst8:** no

**DungN:** no

**JessicaGH:** That would be awesome if they came out and did a training at your school!

**DavidWe:** That's readily available (typically Microsoft Excel) yet, again, people don't have much experience with it as a teaching tool

**IhorC:** Wendi Petti is keeping Logo alive and well.

**SusanR:** In fact the concept of turtle geometry grew out of the Logo Group at MIT.

**SusanR:** This is the book I recommend  
<http://www.amazon.com/gp/product/0262510375/102-8172030-0184107?v=glance&n=283155>

**DavidWe:** Want to respond to a few of the recent comments/questions, Ihor?

**ShannonU:** please

**SusanR** listens

**IhorC:** There are a lot of great books about Logo that are some what dated.

**IhorC:** Logo transformed into Logowriter and then Microworlds at least at LCSI.

**DavidWe** finds the quote he is looking for

**DavidWe** . o O ( "Basically, inservice teachers need a preparation that they have neither experienced as they learned mathematics nor as they learned to teach mathematics" )

**IhorC:** Shawn Jesty at LCSI (Logo Computer Systems) is great at helping as well as is Wendi at Mathcats.com

**DavidWe:** Maggie Niess, who is on the faculty at Oregon State University, has come up with a phrase:

**DavidWe:** Technology Pedagogical Content Knowledge (TPCK)

**DavidWe:** That's overly academic - she's an academic - but the idea is that you need to know how to use the tool first, then you learn how to teach with the tool - then it's a useful tool

**DavidWe** waits for any reactions

**IhorC:** If you have never done Logo before I would recommend mathcats.com as a great place to start. You will be impressed with what can be done with Microworlds.

**MarthaED:** I agree with you, David.

**DavidWe** smiles

**SusanR:** play with the tools...become comfortable ... and then teach

**DavidWe:** I thought the phrase is useful in identifying a concept

**TessaKW:** her phrase seems very logical



**DavidWe:** Susan has done a good job shortening my blurb

**ShannonU:** Does mathcats have a free trial

**DavidWe:** Questions?

**DavidWe** looks at Ihor

**IhorC:** Just go to the site. Everything is basically free.

**DavidWe** smiles

**ShannonU:** on mathcats, right

**DavidWe:** Do you all know about the Math Forum?

**TessaKW:** I am looking at the site really fast before I comment

**DavidWe** . o O ( [www.mathforum.org](http://www.mathforum.org) )

**IhorC:** to run the applets you will need to download a plug in which is explained.

**KatheriGst8:** I saw that on the site

**DavidWe:** Huge web site (where I used to work) that is an online library for math education

**ShannonU:** I know that

**TessaKW:** we need to download microworlds web player first though

**DavidWe** sticks another gold star on Shannon's notebook

**ShannonU:** Thanks

**DavidWe:** Other questions, comments?

**DavidWe:** Ihor, would you like to say a bit more about the Dynamic Classroom?

**SusanR:** David, are you aware of Berkeley Logo

**DavidWe** nods

**IhorC:** Yes. The beauty of the web player is that you don't need to have the program resident on your computer. The programs written in Microworlds will work as applets.

**DavidWe** knows there are many, many versions of LOGO

**DavidWe:** Feel free to say more, Susan

**IhorC:** the Dynamic Classroom is a concept I use to describe the attributes teachers have who make great things happen in the classroom.

**DavidWe:** One of the things that seems to have emerged in mathematics education in the past 15 years (after the initial draft of the NCTM standards) is an effort to include much more interesting mathematics in the K-12 curriculum

**DavidWe:** What attributes are those, Ihor?

**SusanR:** It's a free downloadable Logo application updated for today's systems

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**JessicaGH:** The mathcats website has some really interesting activities

**IhorC:** I'm running a workshop this summer that covers it all in three days.  
<http://ciese.org/time>

**JessicaGH:** My 6th graders would love to work on this website

**DavidWe** . o O ( if you are near Hoboken, New Jersey, please come and join in )

**ShannonU:** Thanks that might be helpful

**DavidWe:** That's great, Jessica

**DavidWe:** Do you have the ability to include outside material (stuff you have just learned about)?

**SusanR:** UBC Logo for those interested <http://www.cs.berkeley.edu/~bh/logo.html>

**DavidWe** doesn't know how tightly tied to a curriculum some teachers are

**JessicaGH:** Yes

**DavidWe** . o O ( UCB Logo\* )

**DavidWe:** cool

**DavidWe:** We know lots of teachers who are really pushed to get students prepared for high-stakes tests

**TessaKW:** the ability to include outside material into the classroom? it has to be okayed by the county first

**StephenL:** I am slowly learning to take more risks with the curric.

**ShannonU:** that is what I am going through right now

**MarthaED:** That's how it is where I am, David.

**DavidWe** nods

**DavidWe:** Good luck with that, Stephen

**DavidWe:** I know that some of you had some other questions at the beginning of the hour

**JessicaGH:** I teach a Math Strategies course for low-level Math students. The class has no curriculum yet, so I can try whatever I want to

**TessaKW:** my school seems to be if it works, do it

**JessicaGH:** It is nice

**DavidWe:** Very nice, Jessica. Where do you teach?

**JessicaGH:** At a middle school in Kingwood, TX

**DavidWe** nods

**TessaKW:** what grade?

**MarthaED:** Jessica, you have a great opportunity to incorporate technology to aid you.

**JessicaGH:** 6th

**IhorC:** If anyone is planning to be in St. Louis for the NCTM meeting David and I will be leading a session on math and technology. Check out <http://clime.org> for details

**JessicaGH:** Yes, I do

**DavidWe:** Yes, I would think often the "low-level" students may really benefit from the technology infusion

**JessicaGH:** They love it!

**DavidWe** smiles

**DavidWe:** I think many people have found that the students who don't always "Get it" in math class really benefit from the technology approach and conversely, the "Good" students may have more difficulty with learning things WITH technology

**SusanR** will join CLIME

**DavidWe:** We've got about 10 minutes left...can we address any other questions or concerns that anyone brought with him or her today?

**MarthaED:** Also, dynamic software programs can help students understand concepts as though they had manipulatives.

**DavidWe** smiles

**KatheriGst8:** I've found that the "good" students have trouble getting it with any type of outside help

**DavidWe:** Yes, virtual manipulatives are often powerful learning aids

**ShannonU:** Next year I will have a computer lab designated to my class because I teach all of the remedial students in the school

**ShannonU:** I am very excited

**DavidWe:** Interesting, Shannon. We would like to hear how that goes

**TessaKW:** does LOGO cover any other concepts other than geometry?

**DavidWe:** Again, if you haven't figured out this part of Tapped In...

**ShannonU:** I will keep you all posted

**MarthaED:** What grade, Shannon?

**DavidWe:** Part of what goes on here is teacher to teacher communication - the idea of a Community of Practice

**DavidWe** . o O ( teachers sharing examples of good teaching experiences (or bad) )

**SusanR:** problem solving, Tessa, guides , turns reflections, symmetry, probability

**ShannonU:** 6th-8th

**TessaKW:** thanks

**StephenL:** If I have further questions later on as I read the transcript.... Is there a way to contact participants

**StephenL:** Sorry this is the first time I have participated in a Tapped In session

**DavidWe:** I think the modern incarnation of LOGO (i.e. MicroWorlds) is a full multi-media toolkit that can do a host of activities, even beyond math

**DavidWe:** No problem, Steven

**StephenL:** I teach programming (Java) and I had forgotten completely about Logo...Thanks for the links and the reminders

**ShannonU:** Thanks for all of the information

**DungN:** never know if not attend this session

**DavidWe:** Thanks to all of you for coming - sorry it was a bit haphazard at the outset

**DavidWe:** I lead a math and technology discussion later in the month - this month it is on Tuesday...

**TessaKW:** This was very informative. I love learning about new programs.

**JessicaGH:** Thanks for the info!

**DavidWe:** 18 April

**StephenL:** Muchas gracias

**KatheriGst8:** thanks

**MarthaED:** I will try to make it, David.

**DavidWe** . o O ( at 7:30pm EDT )

**DavidWe:** You're welcome, de nada

**DavidWe:** Thanks, Susan, Ihor for helping out

**IhorC:** any time.

**SusanR:** THANK YOU!

**DavidWe** smiles