Title of Session: Problem Based Curriculum
Moderator: Chris Aguirre
Title of File: 20060106pbc
Date: January 16, 2006

Room: After School Online Conference

ChrisA: Were is everyone from?

ChrisA: well OK I guess I will start. I am coming to you from sunny Kodiak today

BJB2: as Chris implied with his question, we usually start the Tapped In discussions with introductions

BJB2: I'm an art teacher in Pennsylvania

KeithEE: California for me

ChrisA: which is cool because I did see the sun and that is the definition of a good winter day on Kodiak

ChrisA: cool what part Keith?

BJB2 would NEVER survive a long Alaskan night

ChrisA Chris isn't sure he can either

ChrisA: Emily where are you from

EmilyW: I am in TX, I am on helpdesk on Tapped In

KeithEE: Bakersfield, I had a friend from Kodiak while is was in the military.

DavidWe joined the room.

BJB2: hi, David. Just in time for introductions

ChrisA: born in California city (I am not sure that [it's] still on the map

BJB2: Chris, why don't you define what Problem based Curriculum is and then we can show Keith how to join the group

DavidWe: I'm David Weksler. I'm one of the HelpDesk volunteers and I lead a math and technology discussion in Tapped In that will take place tomorrow evening

ChrisA: not a problem for the purpose of this discussion

ChrisA: let's define problem based curriculum as curriculum centered on a central problem. That problem will encompass

ChrisA: the learning points you're trying to get across

ChrisA: in away it is applied learning

BJB2: are you familiar with the term, Keith?

KeithEE: no

KeithEE: what kind of problem

ChrisA: today I was hoping we could talk about structure and how to go about setting up problems that might work

KeithEE: and don't let me slow you down!

ChrisA: I know coming out of vocational education that we look for problems that have a real world component to them

ChrisA: so we are always looking as to were industry is doing what we are teaching then look at the problems they face and tries to wrap the skills we are teaching into one of those problems

ChrisA: the thing is that if you teach an academic subject like math or science or ELA I think the question becomes how would this work for you?

BJB2: what do you teach, Keith?

ChrisA: does anyone use any kind of scenario or experiential learning project?

BJB2: Chris, are you familiar with the FIRST LEGO Robotics projects?

ChrisA: is anyone interested in developing a problem that can be used in their class

KeithEE: actually I'm working on my degree to become a high school counselor

BJB2: ahhh...right. Thanks, Keith

ChrisA: ya I am familiar. I ran a week long intensive called "geek week" based on Lego robotics

BJB2 . o O (good place for problem solving skills)

BJB2 smiles. There is a group that meets in Tapped In twice a month to discuss the local teams and the competition

ChrisA: and nobody gets through the Pepperdine OMAT program without an intense LEGO experience

ChrisA: I think LEGOs are great. Does anyone currently use them in class?

DavidWe: I'm not a classroom teacher

ChrisA: Is anyone using bridges Math

DavidWe . o O (but I like LEGO)

ChrisA: that's cool I like LEGOs too

BJB2: they have a younger kids version...let me see if I can find the url

ChrisA: I know at the school I am working at now we are considering aligning a math course with an intermediate music course for students with an emphasis in Music

DavidWe: Way cool, Chris. I'm very interested in that and I've met some folks who've developed an elementary math+music curriculum

ChrisA: we think that a problem based curriculum is a good way to take the math knowledge out of the room and carry it over to an interest they have

ChrisA: cool we would love to arrange a time to talk and trade ideas

BJB2: http://www.usfirst.org/vex/

ChrisA: also we have recently successfully crossed welding and art and came up with a course called welding for artists

DavidWe nods

BJB2: David, what about the person you had as a guest that had a cool program for music algorithms

DavidWe: Well, project/problem based learning really allows for wonderful interdisciplinary things

ChrisA: we think that has some potential for ELA skill in the form of a reflective journal kept by students about their experience

ChrisA: thanks for the link

KeithEE: so when you say problem, what do you mean? life issues, business issues?

DavidWe: Yes, Jonathan Middleton, a music professor at Eastern Washington University

BJB2 . o O (yep, thanks, David)

DavidWe: http://musicalgorithms.ewu.edu/

ChrisA: I love the problem vs project based debates going on I guess in my mind they are pretty much the same thing. I projects as being enveloped by the problem given out

DavidWe: Instead of dividing up knowledge into subject specific courses, Keith - pick a problem to study and then look at if from different perspectives. Where's the math?

BJB2 . o O (the music algorithms transcript is archived at www.tappedin.org/transcripts)

DavidWe . o O (For example: Design a recycling center)

ChrisA: great question when I say problem I mean something that has meaning and importance that allows the student immerse themselves in work that feels meaningful

ChrisA: so it could be both of those things or just one

ChrisA: it depends

ChrisA: I know at the middle school in my district we are putting together a problem based on rocket science

ChrisA: we did that partly because we actually have a launch facility on the island and fairly high number of rocket scientists

ChrisA: we think we can actually teach geometry concepts by taking classroom instruction point it at problem in rocketry and allow students to apply their math knowledge in solving the problem

DavidWe . o O (parabolas)

KeithEE: so like in high school. kids who are in drafting should apply that by drafting houses, buildings, bridges.

ChrisA: it's really LEGO mindstorms without the LEGO

DavidWe nods

ChrisA: ya parabolas come into play arc comes into play understand thrust comes into play but that aligns to physics

ChrisA: so lets look at it from this point of view if you were faced with a task of coming up with a problem to allow students to experience the knowledge you were teaching them were would you start?

KeithEE: how that problem can be important to life.

ChrisA: ya I agree

ChrisA: I think to develop a good problem you need it to hold meaning for the people attempting to solve it

KeithEE: then making that problem interesting. maybe getting the students involved in finding a way to solve it.

ChrisA: how then do you go about structuring the problem in such a way that it does not feel contrived?

ChrisA: I agree again (I guess I am very agreeable today)

DavidWe: Allowing the students to identify a problem that they see

KeithEE: allowing it to be hands on.

ChrisA: I advocate it needs hold importance. That we seldom engage in problems that do not hold some gain for us and that we should allow students to always see where they benefit from solving the problem we give them and as important who else benefits

ChrisA: ya great point allowing them to have some say in structuring and identify the problem usually does the trick and it creates by in

ChrisA: I would contend that by in creates relevance

ChrisA: man you get those three things into your problem and I think you have a keeper

ChrisA: I know one the things we do every year is a salmon egg take

DavidWe smiles

DavidWe: That sounds pretty cool

ChrisA: we do it district wide and every school showcases a salmon talk were student body if they choose can follow the growth of the eggs into fry

ChrisA: now some teachers use that as a science lesson

ChrisA: some use it as ELA lesson by writing about it the experience or creating short stories from the fish point of view

ChrisA: and some others use it as a civic lesson based on the fact that we are a fishing community and salmon plays a big part in our economy

ChrisA: so out of one event we had different angles to work off of

KeithEE: you could also use that in history.

ChrisA: keep in mind this project would not be a good example of problem based curriculum in the above examples

ChrisA: It would be if we put into the equation a question how do we know if the silver population is declining?

ChrisA: what could possibly take its place if we over fish it?

ChrisA: if we experienced a tsunami what would happen to the water shed and the stream mouths

BJB2 . o O (silver or salmon?)

ChrisA: silver is a type of salmon sorry about that

BJB2: ahhh...thanks.

ChrisA: these type of questions help form the basis of a problem

DavidWe: more valuable than bronze salmon; not as valuable as gold

ChrisA: that we could potentially wrap into curriculum

ChrisA laughs

ChrisA: ya that it

ChrisA: I think as the problem takes shape it will develop a natural assessment avenue

KeithEE: so basically like a economics class

ChrisA: how so

KeithEE: where they teach investment and budgeting

ChrisA: ya I get it

ChrisA: ya like an economics class and like an economics class if you played the stock market game then you would be engaging in a problem

ChrisA: we think that closing that gap what we call the "real world" and "school" will help students improve their academics

KeithEE: it will definitely make it more interesting!

ChrisA: ya I agree what do you think David?

KeithEE: the thing is can there be a problem based for every class subject.

BJB2: Chris, we have 15 minutes left. Would you like to have Keith join the PBC group?

DavidWe: Closing the gap seems very important -making education relevant

ChrisA: you know that is a good question we are in the process of implementing "bridges math" in our district

ChrisA: is anyone else familiar with this program

KeithEE: what's that.

ChrisA: bridges math is project based math instruction that culminates with a capstone project that I would call a problem

ChrisA: so all math contexts are introduced inside of a relevant context

ChrisA: and there is a lot of explanation as to why something works the way it does like base 10 or base 5 or base what ever for that matter

DavidWe . o O (base 16 for computers)

ChrisA: its goal is to explain math in a relevant way

ChrisA: ya like base 16

KeithEE: that would be good. because a lot of times you ask how in the world am I going to use this.

ChrisA: now this is our second year in this program and it's showing progress

ChrisA: we have worked out all the kinks but it has potential

ChrisA: ya I agree Keith and I think if we are going to get this to work for students we need to always allow them to see the relevance at what they are attempting

ChrisA: So has anyone ever used LEGO mindstorms in the classroom?

KeithEE: no but that would be great

BJB2: I've seen it demonstrated, but never used it myself

KeithEE: is there anything on the internet about it?

ChrisA: well I recommend checking it out I have used them in my room for the past 4 years with a lot great results

ChrisA: ya checkout mindstorms.com and google search will lead you in a lot of directions

ChrisA: I know if I gave out a problem like "your challenge is to make a bot that will climb three feet up a wall" that brought out something in my students that wasn't obvious during instruction

ChrisA: it also gave them a chance to bring in knowledge from other subjects into their pursuit of an answer

ChrisA: That's the part I love it really is a great tool for seeing learning transfer happen

ChrisA: all you really need is an idea

ChrisA: and off you go

ChrisA: I think one of the best ones we ever did was to create a dog that can find and retrieve a ball

BJB2: a lot of the project is also about team building

KeithEE: what class do you teach

ChrisA: took one week and the three fifth grades students faced with the problem really did a nice job with it and created a dog that could find and retrieve a ball

ChrisA: I taught a graphics art class

ChrisA: and I tied it back into my curricula by having my students create media and information documenting their experience

KeithEE: ok. I see how the legos would work!

ChrisA: so they created a web site and kept online journals they created a movie that showed their progress towards solving their problem and they had to create a flash animation demonstrating the key concepts of their design and their robot in action.

KeithEE: wow what grade was this?

ChrisA: Hey this has been great but I need to get to my budget meeting

KeithEE: cool it was nice chatting with you guys!

ChrisA: drop me an email if you want to trade projects on that music curriculum and I will check out the link you sent me

ChrisA: thanks for the conversation

ChrisA waves goodbye

BJB2: thanks, Chris...great session