Garfield HS AfG Class Experience:

Apps for Good
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Garfield High School, Seattle, WA
Teacher: Earl Bergquist (embergquist@seattleschools.org / www.garfieldcs.com)
25 years Computer Engineer experience, most recently at Amazon.com for 11 years as a
QA/Software Test Manager. Earned CTE Teaching Certificate and now in 3rd year teaching 4
high school Computer Science classes: Exploring, Intro to (Programming), AP & Projects.

Summer 2013:
- Two classes of Student Educational Enhancement Program (SEEP) summer school
students for "grade retrevial" trialed the AfG cirrullum one period a day (4 days per week
for about 6 weeks), using the 21 week 2012-13 AfG materials. I helped provide
technical support for App Inventor plus identify and assemble key material for lectures.
Also served as Expert for feedback based on my Amazon experience. Later I worked
with 2 selected teams after class to further develop their projects and build out
functional prototypes with them (Up to Date & Nanny App).
Summer Class Page:
   https://sites.google.com/site/garfieldappsclass/home
Gathered and editted Summer Class material for students:
   http://www.garfieldcs.com/seep-apps-class-page-2013/
My Initial Review of AfG material and thoughts on how to integrate it:
   http://www.garfieldcs.com/apps-class-preliminary-review-of-material/

Challenges:
- honing down the material while learning it & attending trainings.
- getting students to put in extra time during the summer.
- technical difficulties with our lab especially with device emulation (I had only 2 tablets)
and we lost our directory of student work once. Result was limited App Inventor time.
- the two classroom teachers knew nothing of App Inventor or product development.
- had some resistance from parents to sign the release for their child's image and name
to be used.

Results:
- Most teams moved along fine and interest varied – I missed the brainstorming.
- Researching similar apps was limited and not well focused. User personas helped…
- **Scenario Maps was key turning point** – it pulled together use of the User Personas
and get them started thinking through screens and how the App would work. Physical
poster board, colorful post-its and ability to brainstorm & rearrange worked very well.
Teams later naturally started drawing out thier map of screens. Also was a good time
for our "Expert Session" discussions on the design, function & flow.
- Students enjoyed building Wire-frames in Balsamiq probably the most.
- About half the teams designed games, others focused on shopping, and more fashion
(i.e. shoe) projects. Three most driven and practical teams were:
Up To Date – updating your computer from your phone:
   https://sites.google.com/site/garfieldappsclass/home/up-to-date-app
Find a Nanny App – scheduling a baby sitter in a jiffy:
   https://sites.google.com/site/garfieldappsclass/home/find-a-nanny
Hand Helper – assists students in studying
   https://sites.google.com/site/garfieldappsclass/home/handy-helper-app

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Fall 2013 – Introduction to CS & Projects in CS (1 semester classes):

Introduction to CS (programming) – one semster class on programming principles, loops through procedures. Last year taught in Scratch (Ver 1.4) and Build Your Own Block. This year App Inventor replacing BYOB. (2 sections taught)

Projects in CS – single semester post AP CS (year long Java class) for students to build projects in teams of their own choosing. Agile software development process taught along with industry tools like GitHub & Eclipse. Variety of languages & platforms used by students and supplemented by 2 industry mentors.

Planned Goals:

Projects in CS: go through the AfG project design & iteration process (through Scoping) in first 5-8 weeks and then have teams start various production approaches. Leverage material honing here for the Intro class.

Intro to CS: Start in Scratch teaching programming principles & projects, adding in AfG initially every other week, then one day a week and eventually our 2 hour block day every week. App Inventor replacing Scratch for last week (14 – 20), to teach procedures and AfG product development.

Challenges: (A perfect storm?)

- It took our district 7 weeks to order our Tablets, (arrived Dec 17th), we lost at least 2-3 weeks of App Inventor time due to this.
- New 2013-14 AfG material was not all available at start of year, so I combine some new with the previous year's material for my Projects in CS presentations.
- AfG material changed and expanded; it really is a very full year of material now. I had a challenge choosing what to use for the Intro class; some was completely new (i.e. Social Apps and more detailed Research & Scoping exercises) – it's all great, but was a bit overwhelming; plus since I was doing this sooner in one semester; I was using material without seeing the next unit.
- My Intro class was more differentiated than prior years – from a suggestion of our senior conselor, I lowered the math requirement this year and had a larger range of student skill levels, including many English Language Learner (ELL) students in one class. This made teaching the key programming principles more challenging while keeping all students engaged.
- App Inventor upgraded to 2.0 – my lesson material was from the first version and I had to adapt on the fly. I discovered that 2.0 is limited to "return only" and "do only" procedures; there is no "do AND then return" procedure (key concept I add with App Inventor). App Inventor 2 is so much easier for students to use and I appreciate the upgrade; however the subtle differences and my needing to relearn, rethink and revaluate lessons caused some unplanned challenges.
- My bad – I did not use the AfG website for my teams as is specified. I was planning on only having those teams who decide to compete to fill in the site details. I have some concern that not all parents would agree to the terms of use, specifically right to use student images and names, and that cannot be a requirement for a Washington State public school class. Going forward with our after school Apps class, this will become a requirement as it is an optional activity and I want the extra commitment for participants.

- Not having the contest guidelines, I did my best to formalize deliverables for end of semester in hopes that most requirements would be finished in class.

Results: (still in progress)
- Projects in CS class all found value in using the AfG process, but to different degrees. Most of these students are self starters and several arrived with a project in mind along with the platform to use and some demo code. Others found the process an invaluable way to identify a good project and applied it step by step resulting in a couple really well developed applications, now under construction.
- Major mistake made made in my Intro class – At Garfield High School we are strive to be inclusive; so when creating teams, I placed a variety of students on teams trying to balance out self identified strengths (programming, advertising, graphics, organization, etc.) and cutting across, skill level, demographics and socioecnomics. Unfortunately, one key to team formation is finding a common problem that all members share to solve, so this was less likely to happen due to this diversity. Looking at the most prominent teams used in the AfG sample material there is a variety of demographics from team to team, but within a team one often finds homogony in gender, ethnicity, and such. Going forward I will guide teams to form based on interest which will likely make them more likely to discover common problems to be passionate about and rally to solve.
- Most students do not like to do user surveys; however one of our games team were really motivated and surveyed over 30 students to determine what is really needed in a good game – clarifies passionate motivation really helps.
- Again Senario Maps and then going to Balsamiq was uniting moment for many teams, one went crazy creating 20+ page sequences – we like the linking feature.
- Expert sessions are key to making teams make the process more successful. Feedback from developers at Amazon.com really motivated students to consider the potential, relevance and significance of their App idea. Both experts and students enjoyed the sessions and were invigorated by the exchange. I assumed that this is obvious, but even as an industry person I was impressed with the results. Our projects in CS class expert sessions were video taped professionally, I have not reveiewed them all, but they can be found here: http://www.garfieldcs.com/projects-in-computer-science/2013-fall-projects-in-cs/app-for-good-expert-session-videos-fall-2014/
- A semester is not enough time for AfG, especially combining it with Intro to programming. Overall lack of time has not allowed my Intro class to iterate as needed on their Apps and some teams are now building a prototype that is not fully viable; however this will allow them to integrate their programming skills and meet that key goal of the class. Adding an after school Apps Club will allow them this time to iterate and perhaps form a more familiar team to further their design process building on our class work.
- I also did not have time to teach the Business Model (case & marketing) and some newr parts of the Product Development, so there is plenty more to do 2nd Semester in Projects in CS and the after school Apps Club.

Ideas/Suggestions for the future:
- Identify recommended key lessons to prioritize for each unit – there is a lot of material in the new sections and I imagine other teachers may be needing to triage what to use due to time contraints. Perhaps presenting them as required, suggested and optional activites; or items as choose one of these exercises could help out new teachers.
- Printed text to accompany the Powerpoints slide presentations, a cheat sheet when we present them to class. The notes for the slides are great, but I have not figured out if there is a way for only me to see the notes as I project the slides.
- For those of us teaching AfG as a formal class, we could use suggestions for grading students. It would be nice to have assessments and Rubrics within the program activities.
- Suggest team member roles for students to try out. I borrowed the roles used by our science department:
http://www.garfieldcs.com/wordpress/wordpress/wp-content/uploads/2013/10/Group-Roles-in-Teams.pdf
- Devlop a set of worksheets students can go back to when they realize they have to take a step back in the process and once again brainstorm, screen, scope, & research refined or new ideas. I was thinking of a file folder (online or physical) to draw from as a reminder of these activities when teams need to restart and possibly for students to teach new club members how to get started. Eventually I hope to have a club full of experts who teach students themselves through the process. Assembled key reference exercises would help with this.

Thanks:
I wanted to take the opportunity to thank the Technology Alliance for bringing Apps for Good to our Washington state students and the AfG team for sharing their incredible resources and insights. Developing STEM skills and entrepreneurial understandings is key to our students success in the 21st Century workplace and academia. Designing and building Apps is a great way to inspire students to connect to these abilities while developing valuable team and leadership skills. I am proud to be a part of it.

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