

BATTLESHIP NUMBERLINE!!

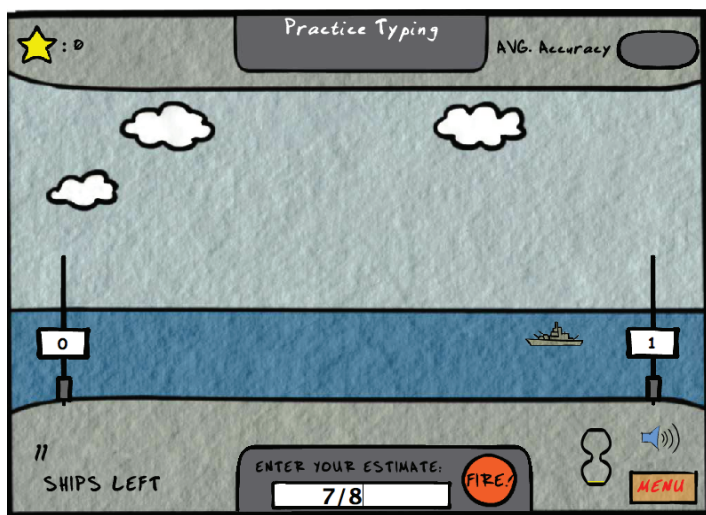
An exploratory data analysis
of Educational Game Log Files
and Engagement Survey Items

PSLC LEARN LAB
SUMMER SCHOOL
EDM TRACK
2011

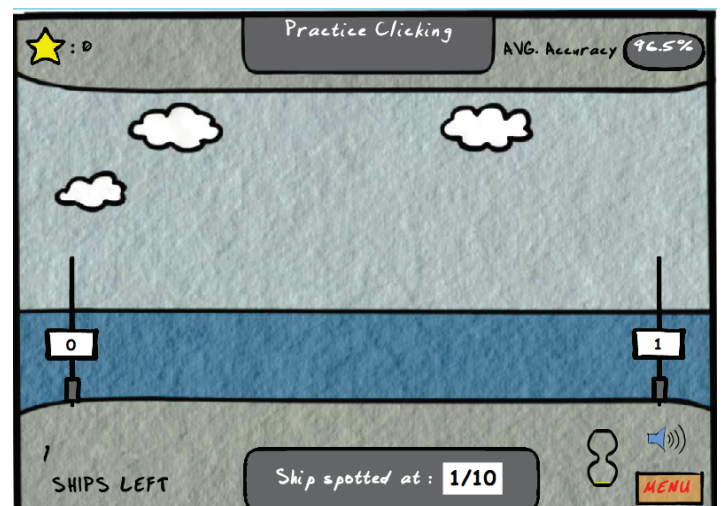
By DIXIE CHING
and DEREK LOMAS



BATTLESHIP NUMBERLINE!!



Typing Mode



Clicking Mode

METHOD!!

The following fractions were presented to players each level, over 4 levels, for a total of 86 trials of number line estimation.

1/10, 1/8, 1/6, 1/5, 1/4, 3/10, 1/3, 3/8, 2/5, 3/7, 1/2, 3/5, 5/8, 2/3, 7/10, 3/4, 4/5, 5/6, 7/8, 9/10.

SUMMARY STATISTICS!!

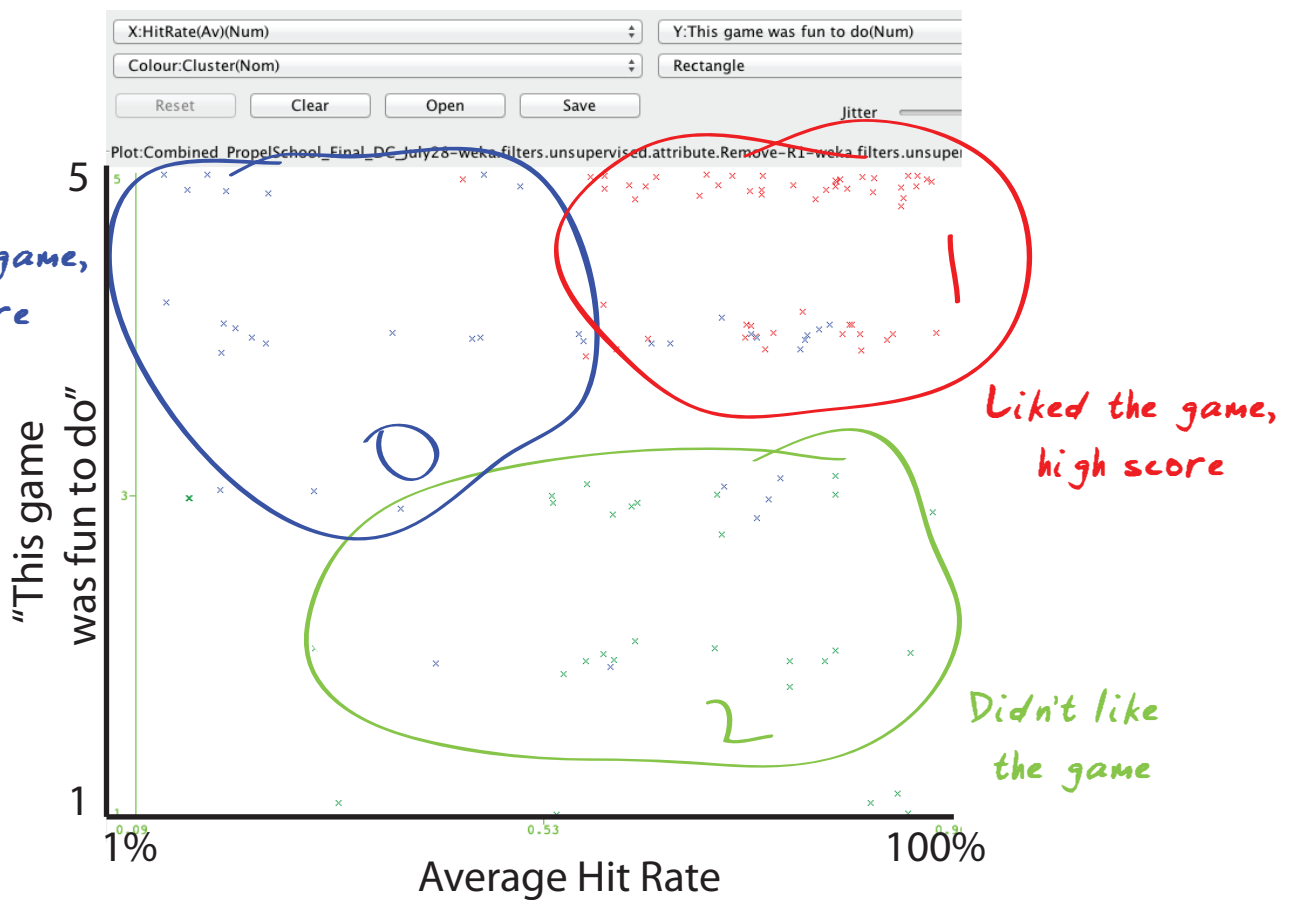
	Counts	Average Hit Rate	Improvement
▼ 4th	55	58.6%	8.1%
F	30	59.3%	6.4%
M	25	57.7%	10.1%
▼ 5th	36	63.9%	7.8%
F	17	58.1%	8.7%
M	19	69.2%	7.1%
▼ 6th	31	77.2%	3.6%
F	14	75.3%	2.6%
M	17	78.8%	4.5%
Grand Total	122	64.9%	6.9%

SURVEY ITEMS!!

Questionnaire Item	Percent Players Who Agree or Strongly Agree		
	Female (n=60)	Male (n=64)	All (n=124)
"This was a good game"	68%	83%	76%
"This game was fun to do"	59%	75%	67%
"I think my friends would like this game"	39%	66%	53%
"I want to play this game again some time"	67%	78%	73%

When playing this game, I felt really focused
 I wish we played this game in class
 This was a good game
 I tried very hard on this game
 I enjoyed playing this game
 I was pretty skilled at this game
 I thought this was a boring game
 I think I did pretty well at this game, compared to other students
 This game was fun to do
 I think I am pretty good at this game
 I would describe this game as very interesting
 I would like to become better at this game
 At times, this game made me frustrated
 This game was too difficult
 I want to play this game again some time
 I think my friends would like this game
 I did NOT like this game
 I would be interested in playing this game at home
 This game teaches important math skills
 This game was too easy
 After a while I became better at this game
 How many minutes do you think you spent playing the game?
 Which level did you enjoy playing more? (ship=0, sub=1, no pref=null)
 How challenging is your math class?
 How challenging was this game?
 How does this compare to your favorite board games?
 How does this game compare to your regular math class?
 How does this game compare to your favorite subject in school?
 How often do you play video games?
 How good are you at video games?
 How good are you at math?
 How much do you like math?
 How many minutes do you think you spent taking this survey?

clustering identified
three main clusters!!



Linear Regression Models!!

Hit Rate Improvement

0.0538 * Grade=5th,4th +
-0.0169 * I was pretty skilled at this game +
-0.0219 * I think I did pretty well at this game, compared to other students +
0.0199 * I think I am pretty good at this game +
-0.0215 * I would describe this game as very interesting +
-0.0321 * I want to play this game again some time +
0.0195 * I think my friends would like this game +
0.0322 * I would be interested in playing this game at home +
0.024 * After a while I became better at this game +
-0.0176 * How challenging was this game? +
-0.0041 * How many minutes do you think you spent taking this survey? +
0.1053

Correlation coefficient	-0.0322
Mean absolute error	0.0918
Root mean squared error	0.1189
Relative absolute error	114.5913 %
Root relative squared error	113.6902 %
Total Number of Instances	123

Average Hit Rate

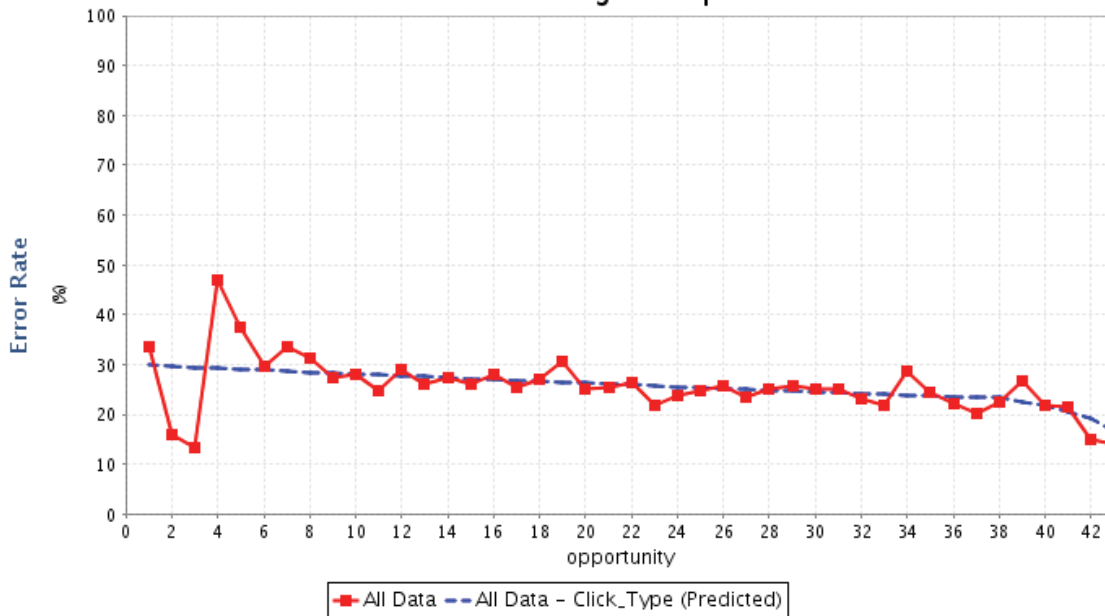
0.1382 * Grade=6th +
0.097 * I think I am pretty good at this game +
-0.0461 * This game was too easy +
-0.0327 * How does this compare to your favorite board games? +
0.4702

Correlation coefficient	0.0747
Mean absolute error	0.2135
Root mean squared error	0.2765
Relative absolute error	113.401 %
Root relative squared error	117.9102 %
Total Number of Instances	123

Dataset: Propel Game Data
Sample(s): All Data

KC Model: Click_Type

All Selected Knowledge Components



[hide graph info](#)

Min and max opportunity cutoffs: **0, 43**

Included observations (dropped observations)

All Data: **11169 (0)**

KC Models

Sorted by BIC value, then name.

tenths

created by system on 2011-07-28 15:24:14.0

mapping type: correct-transaction-to-kc

model fit values:

AIC	BIC	Cross Validation RMSE*
9132.76	10129.22	0.351682

[show model details](#)

2 KCs

[export](#)

status: ready to use

11236 observations labeled with KCs
11236 observations used in cross validation

stud_denom

created by system on 2011-07-28 15:24:14.0

mapping type: correct-transaction-to-kc

model fit values:

AIC	BIC	Cross Validation RMSE*
9184.2	10327.19	0.353185

[show model details](#)

12 KCs

[export](#)

status: ready to use

11236 observations labeled with KCs
11236 observations used in cross validation

Click_Type

created by system on 2011-07-28 15:24:14.0

mapping type: correct-transaction-to-kc

model fit values:

AIC	BIC	Cross Validation RMSE*
9335.89	10332.35	0.358367

[show model details](#)

2 KCs

[export](#)

status: ready to use

11236 observations labeled with KCs
11236 observations used in cross validation

DATA SHOP
Yo!

THANK YOU!!

Leigh-Ann

Noboru

JACK

Ken K

...and the rest
of "the crew"