

BATTLESHIP

NUMBERLINE!!

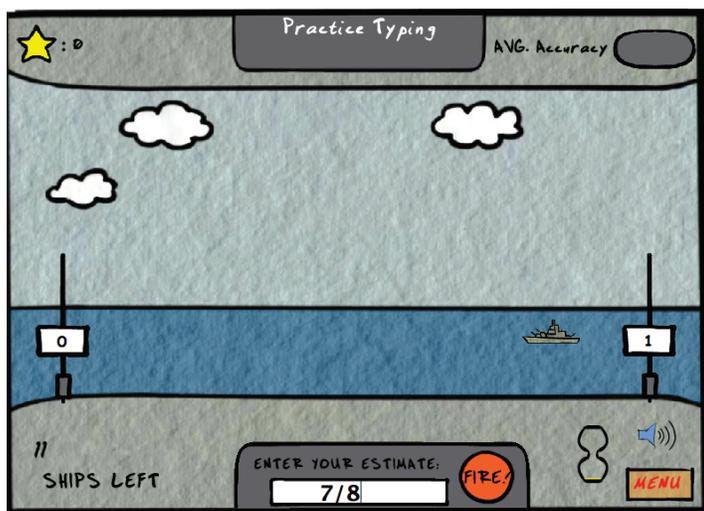
An exploratory data analysis
of Educational Game Log Files
and Engagement Survey Items

PSLC LEARN LAB
SUMMER SCHOOL
EDM TRACK
2011

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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!!

	<i>Counts</i>	<i>Average Hit Rate</i>	<i>Improvement</i>
▼ 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?

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

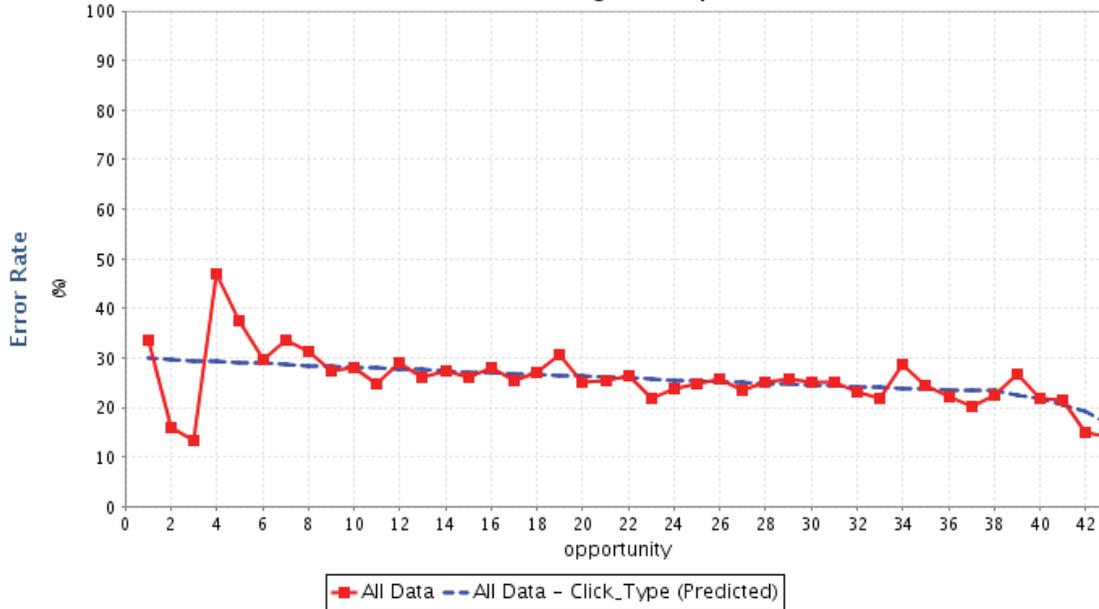
0.1382 * Grade=6th +
0.097 * I think I am pretty good at this game +
-0.0461 * This game was too easy +
-0.0327 * How does this compare to your favorite board games? +
0.4702

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)**

Yo! DATASHOP

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

THANK YOU!!

Leigh-Ann

Noboru

JACK

Ken K

...and the rest
of "the crew"