

Parameters of study

- Indiana Tech dataset included course outcomes for 62,924 distinct student/course combinations (2016-17)
 - 10,149 distinct students across 281 distinct courses
 - Mean courses/student = 6.2
 - Median courses/student = 5
 - Modal courses/student = 2
- Tutor.com dataset includes tutoring sessions and tutoring hours served by student/course
 - 1,325 students had course-attributable Tutor.com usage
 - 1,952 distinct student/course combinations had Tutor.com usage (~3.10% of overall Indiana Tech dataset)



Parameters of study

- 71 courses had attributable Tutor.com usage
- Top courses for Tutor.com usage included:

d_cou	ırse_num	% of student-course combinations from IT dataset with Tutor.com usage
ENG	1250	29.93%
ENG	1100	21.31%
HIM	3000	11.11%
HIM	3400	11.11%
MA	1100	10.81%
ENG	1270	8.62%
PH	1100	7.69%
MA	2025	7.28%
ACC	1010	7.23%
PH	2100	5.88%

 210 courses had no attributable Tutor.com usage, and were excluded from the study



High-level summary

- Student/course combinations that had Tutor.com usage were 14.20 pp more likely to receive a passing grade:
 - Pass rate for combinations w/ Tutor.com usage = 75.00%
 - Pass rate for combinations w/o tutor.com usage = 60.80%
- Gains from TDC usage were greatest for students with lower GPAs (0.5-2) and fewer credits earned (0-75)
- Among TDC-using students, those with more tutoring hours were likelier to pass than those with fewer



Breakdown by mod_course_num

mod_course_nu m		n of combinations within mod_course_num		share of com receiving pas	Δ	
		Did not use TDC	Used TDC	Did not use TDC	Used TDC	
ACC 1	1010	770	60	64.81%	68.33%	+3.53 pp
ACC 2	2140	575	30	76.70%	90.00%	+13.30 pp
ACC 2	2300	90	3	76.67%	33.33%	-43.33 pp
ACC 2	2320	76	4	90.79%	75.00%	-15.79 pp
ACC 2	2430	86	1	91.86%	100.00%	+8.14 pp
ACC 2	2440	93	1	83.87%	0.00%	-83.87 pp
ACC 2	2500	53	1	79.25%	0.00%	-79.25 pp
ACC 3	3500	59	1	94.92%	100.00%	+5.08 pp
BA 12	200	3569	7	46.62%	57.14%	+10.52 pp
BA 20	010	1526	4	68.68%	100.00%	+31.32 pp
BA 22	200	856	1	86.92%	100.00%	+13.08 pp
BA 24	410	1109	3	77.10%	100.00%	+22.90 pp
BA 25	500	969	2	79.88%	100.00%	+20.12 pp
BA 27	700	1117	2	76.45%	100.00%	+23.55 pp
BA 28	850	870	1	78.28%	100.00%	+21.72 pp

mod_course_nu		n of combinations within mod_course_num		share of combinations receiving passing grade		
m	Did not use TDC	Used TDC	Did not use TDC	Used TDC		
BA 3200	618	1	79.29%	100.00%	+20.71 pp	
BA 4910	568	1	80.81%	100.00%	+19.19 pp	
BIO 1110	981	4	65.85%	100.00%	+34.15 pp	
BIO 1210	178	4	75.28%	100.00%	+24.72 pp	
CJ 1100	1007	1	49.95%	100.00%	+50.05 pp	
CJ 1300	295	3	62.37%	100.00%	+37.63 pp	
CJ 2300	178	1	71.91%	100.00%	+28.09 pp	
CJ 2500	183	1	80.33%	100.00%	+19.67 pp	
CJ 3300	167	1	88.02%	0.00%	-88.02 pp	
CS 1250	338	3	70.12%	33.33%	-36.79 pp	
ECON 2200	749	4	74.77%	75.00%	+0.23 pp	
ECON 2210	598	5	82.61%	100.00%	+17.39 pp	
ECON 3140	26	1	61.54%	100.00%	+38.46 pp	
EGR 3430	37	2	83.78%	100.00%	+16.22 pp	
ENG 1100	2762	748	29.15%	71.39%	+42.24 pp	

mod_course_nu	n of combinations within mod_course_num		share of combinations receiving passing grade		Δ
m	Did not use TDC	Used TDC	Did not use TDC	Used TDC	
PH 1100	24	2	95.83%	100.00%	+4.17 pp
PH 2100	32	2	96.88%	50.00%	-46.88 pp
PSY 1700	3270	14	41.68%	71.43%	+29.75 pp
PSY 1750	500	2	70.00%	50.00%	-20.00 pp
PSY 2000	978	3	63.09%	66.67%	+3.58 pp
PSY 2520	620	1	60.00%	100.00%	+40.00 pp
PSY 3520	120	1	79.17%	100.00%	+20.83 pp
PSY 4200	27	1	66.67%	100.00%	+33.33 pp
SCI 2000	303	3	86.14%	100.00%	+13.86 pp
SS 2720	766	3	63.19%	100.00%	+36.81 pp
SS 2800	1889	2	54.00%	50.00%	-4.00 pp

mod_course_nu		n of combinations within mod_course_num		share of com receiving pas	Δ	
m		Did not use TDC	Used TDC	Did not use TDC	Used TDC	
ENG 12	250	1241	530	49.88%	73.58%	+23.71 pp
ENG 12	70	1643	155	61.96%	84.52%	+22.56 pp
ENG 23	20	1113	5	73.14%	100.00%	+26.86 pp
FIN 360	00	546	15	81.50%	80.00%	-1.50 pp
HCA 11	00	394	3	51.52%	100.00%	+48.48 pp
HIM 300	00	8	1	87.50%	100.00%	+12.50 pp
HIM 340	00	8	1	75.00%	100.00%	+25.00 pp
HIT 110	00	255	2	65.10%	100.00%	+34.90 pp
HIT 120	00	200	2	40.00%	100.00%	+60.00 pp
HIT 200	00	103	1	68.93%	100.00%	+31.07 pp
HIT 220	00	69	1	79.71%	100.00%	+20.29 pp
HUM 25	10	268	1	81.34%	100.00%	+18.66 pp
HUM 33	310	713	8	68.30%	75.00%	+6.70 pp
HUM 37	10	550	1	76.91%	100.00%	+23.09 pp
IIT 190	00	334	4	44.31%	100.00%	+55.69 pp

mod_course_nu m		n of combinations within mod_course_num		share of com receiving pass	Δ	
		Did not use TDC	Used TDC	Did not use TDC	Used TDC	
IS	1150	88	1	70.45%	100.00%	+29.55 pp
MA	1000	689	5	62.26%	0.00%	-62.26 pp
MA	1005	2327	36	59.65%	75.00%	+15.35 pp
MA	1010	97	4	63.92%	75.00%	+11.08 pp
MA	1020	1137	21	66.23%	76.19%	+9.96 pp
MA	1025	1789	69	62.10%	63.77%	+1.67 pp
MA	1030	132	8	82.58%	87.50%	+4.92 pp
MA	1100	33	4	75.76%	100.00%	+24.24 pp
MA	1110	32	1	71.88%	100.00%	+28.13 pp
MA	2010	217	3	81.11%	100.00%	+18.89 pp
MA	2025	1032	81	65.50%	88.89%	+23.39 pp
MIS	1300	3041	50	48.93%	84.00%	+35.07 pp
MIS	3000	22	1	36.36%	100.00%	+63.64 pp
MIS	3100	96	2	57.29%	100.00%	+42.71 pp
OL	4900	35	1	94.29%	100.00%	+5.71 pp

	mod_course_nu m	n of ove student-course o		share of com receiving pass	Δ	
		Did not use TDC	Used TDC	Did not use TDC	Used TDC	
	GRAND TOTAL	47244	1952	60.80%	75.00%	+14.20 pp

How to read this data:

In MA 1020, 1,137 enrollees <u>did not</u> use Tutor.com for help with MA 1020, and 21 enrollees <u>did</u> use Tutor.com for help with MA 1020. The non-users had a 66.23% pass rate, and the users had a 76.19% pass rate – a difference of 9.96 percentage points.



Breakdown by mod_course_num prefix

course prefix	n of combinations within course prefix		share of combination	Δ	
	Did not use TDC	Used TDC	Did not use TDC	Used TDC	
ACC	1802	101	73.97%	73.27%	-0.71 pp
BA	11202	22	67.57%	86.36%	+18.80 pp
BIO	1159	8	67.30%	100.00%	+32.70 pp
CJ	1830	7	60.60%	85.71%	+25.11 pp
CS	338	3	70.12%	33.33%	-36.79 pp
ECON	1373	10	77.93%	90.00%	+12.07 pp
<u>EGR</u>	37	2	83.78%	100.00%	+16.22 pp
ENG	6759	1438	48.17%	73.71%	+25.54 pp
FIN	546	15	81.50%	80.00%	-1.50 pp
HCA	394	3	51.52%	100.00%	+48.48 pp
HIM	16	2	81.25%	100.00%	+18.75 pp
HIT	627	6	59.33%	100.00%	+40.67 pp
HUM	1531	10	73.68%	80.00%	+6.32 pp
IIT	334	4	44.31%	100.00%	+55.69 pp
IS	88	1	70.45%	100.00%	+29.55 pp
MA	7485	232	63.49%	76.29%	+12.81 pp
MIS	3159	53	49.10%	84.91%	+35.81 pp
OL	35	1	94.29%	100.00%	+5.71 pp
PH	56	4	96.43%	75.00%	-21.43 pp
PSY	5515	22	51.04%	72.73%	+21.68 pp
SCI	303	3	86.14%	100.00%	+13.86 pp
SS	2655	5	56.65%	80.00%	+23.35 pp
Grand Total	47244	1952	60.80%	75.00%	+14.20 pp

How to read this data:

In ENG courses, 6759 enrollees did not use Tutor.com for help with their courses, and 1438 enrollees did use Tutor.com for help with their courses. The non-users had a 48.17% pass rate, and the users had a 73.71% pass rate – a difference of 25.54 percentage points.



Breakdown by prior GPA & prior credits

prior GPA	n of student/course combinations within prior GPA range		share of combinat	Δ	
	Did not use TDC	Used TDC	Did not use TDC	Used TDC	
0-0.5	5615	65	0.57%	4.62%	+4.05 pp
0.5-1	1842	58	11.40%	31.03%	+19.63 pp
1-1.5	2816	108	22.80%	38.89%	+16.09 pp
1.5-2	3880	178	32.68%	46.07%	+13.39 pp
2-2.5	6645	270	52.10%	60.74%	+8.64 pp
2.5-3	7153	294	72.01%	75.51%	+3.50 pp
3-3.5	8220	400	88.28%	91.25%	+2.97 pp
3.5-4	11073	579	96.67%	98.10%	+1.43 pp
Grand Total	47244	1952	60.80%	75.00%	+14.20 pp

prior credits	n of student/course combinations within prior credits range		share of combinate passing	Δ	
	Did not use TDC	Used TDC	Did not use TDC	Used TDC	
0-15	13593	605	30.60%	61.98%	+31.38 pp
15-30	6926	623	59.50%	75.44%	+15.94 pp
30-45	5523	241	66.85%	82.99%	+16.14 pp
45-60	4971	147	71.21%	86.39%	+15.18 pp
60-75	4741	99	75.95%	88.89%	+12.93 pp
75-90	3872	91	79.91%	84.62%	+4.71 pp
90-105	3335	76	82.82%	88.16%	+5.34 pp
105-120	2735	41	86.76%	90.24%	+3.48 pp
>120	1548	29	89.34%	79.31%	-10.03 pp
Grand Total	47244	1952	60.80%	75.00%	+14.20 pp

How to read this data:

Among course enrollees with a prior GPA in the 1-1.5 range, 2,816 enrollees <u>did not</u> use Tutor.com for help with their courses, and 108 enrollees <u>did</u> use Tutor.com for help with their courses. The non-users had a 22.80% pass rate, and the users had a 38.89% pass rate – a difference of 16.09 percentage points.

How to read this data:

Among course enrollees with 15 or fewer prior credits earned, 13,593 enrollees <u>did not</u> use Tutor.com for help with their courses, and 605 enrollees <u>did</u> use Tutor.com for help with their courses. The non-users had a 30.60% pass rate, and the users had a 61.98% pass rate – a difference of 31.38 percentage points.





Breakdown by gender & ethnicity

gender		n of student/course combinations within gender		share of combinations receiving passing grade	
_	Did not use TDC	Used TDC	Did not use TDC	Used TDC	
F	33174	1436	59.10%	71.66%	+12.55 pp
M	14024	514	64.78%	84.24%	+19.46 pp
(blank)	46	2	73.91%	100.00%	+26.09 pp
Grand Total	47244	1952	60.80%	75.00%	+14.20 pp

How to read this data:

Among female course enrollees, 33,174 enrollees did not use Tutor.com for help with their courses, and 1436 enrollees did use Tutor.com for help with their courses. The non-users had a 59.10% pass rate, and the users had a 71.66% pass rate – a difference of 12.55 percentage points.

ipeds_value_desc	n of student/course combinations within ipeds_value_desc		share of combinations receiving passing grade		Δ
. – –	Did not use TDC	Used TDC	Did not use TDC	Used TDC	
American Indian or Alaska Native	152	6	60.53%	66.67%	+6.14 pp
Asian	158	12	81.65%	91.67%	+10.02 pp
Black or African American	19839	827	46.21%	63.97%	+17.76 pp
Hispanics of any race	1791	67	67.62%	85.07%	+17.46 pp
IPEDs value not calculated	24	3	79.17%	66.67%	-12.50 pp
Native Hawaiian or Other Pacific Islander	62	1	79.03%	100.00%	+20.97 pp
Nonresident Alien	89	6	79.78%	100.00%	+20.22 pp
Race and Ethnicity unknown	1457	41	58.48%	80.49%	+22.01 pp
Two or more races	1318	48	61.53%	70.83%	+9.30 pp
White	15649	724	76.64%	88.40%	+11.76 pp
(blank)	6705	217	64.61%	67.74%	+3.13 pp
Grand Total	47244	1952	60.80%	75.00%	+14.20 pp

How to read this data:

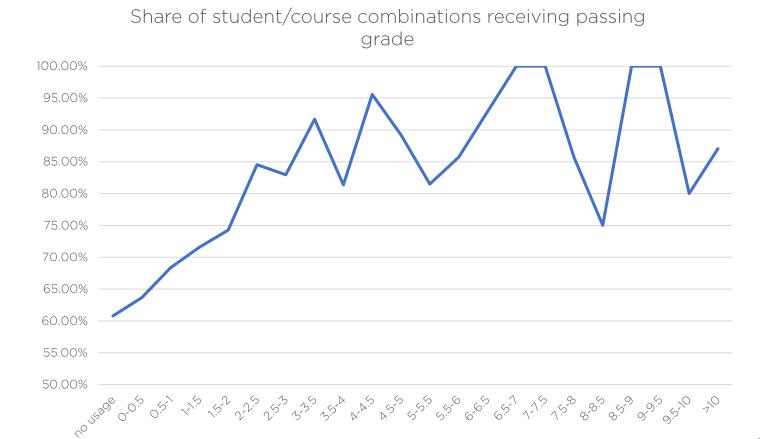
Among Black or African-American course enrollees, 19,839 enrollees <u>did not</u> use Tutor.com for help with their courses, and 827 enrollees <u>did</u> use Tutor.com for help with their courses. The non-users had a 46.21% pass rate, and the users had a 63.97% pass rate – a difference of 17.76 percentage points.





Marginal impact of ongoing usage

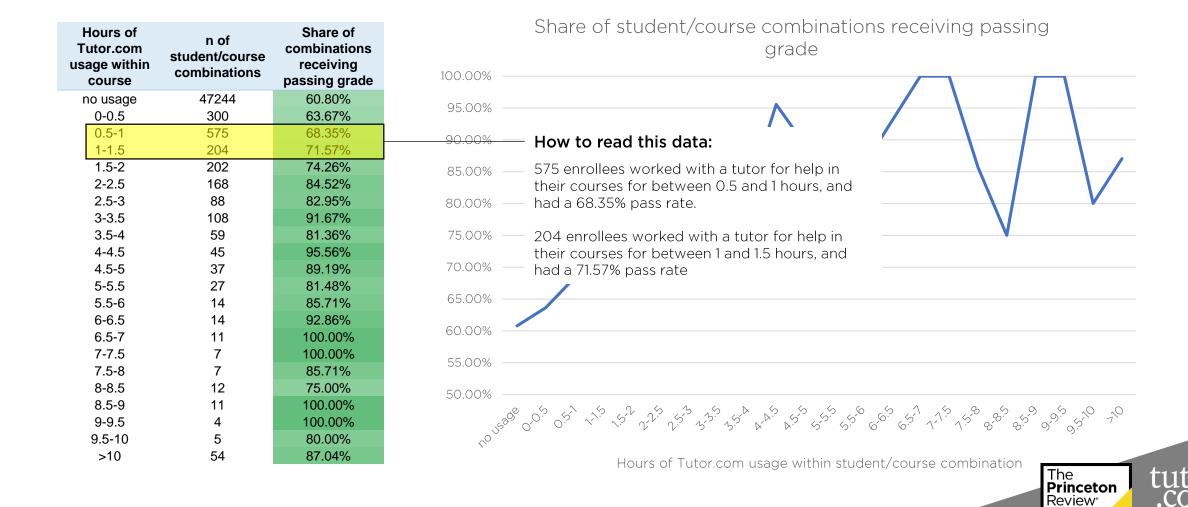
Hours of Tutor.com usage within course	n of student/course combinations	Share of combinations receiving passing grade	
no usage	47244	60.80%	
0-0.5	300	63.67%	
0.5-1	575	68.35%	
1-1.5	204	71.57%	
1.5-2	202	74.26%	
2-2.5	168	84.52%	
2.5-3	88	82.95%	
3-3.5	108	91.67%	
3.5-4	59	81.36%	
4-4.5	45	95.56%	
4.5-5	37	89.19%	
5-5.5	27	81.48%	
5.5-6	14	85.71%	
6-6.5	14	92.86%	
6.5-7	11	100.00%	
7-7.5	7	100.00%	
7.5-8	7	85.71%	
8-8.5	12	75.00%	
8.5-9	11	100.00%	
9-9.5	4	100.00%	
9.5-10	5	80.00%	
>10	54	87.04%	



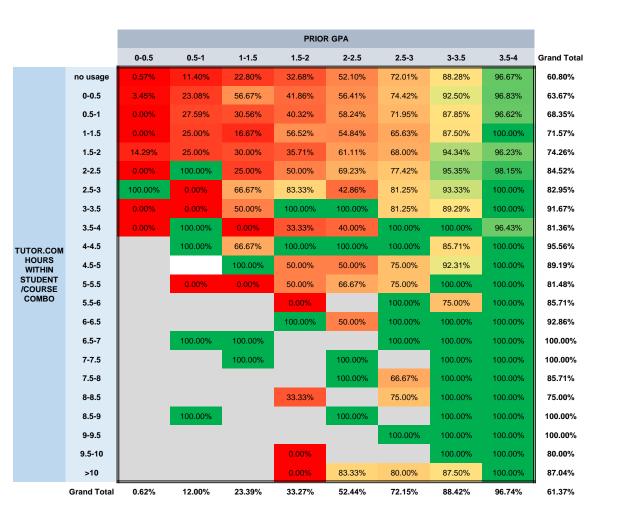
Hours of Tutor.com usage within student/course combination

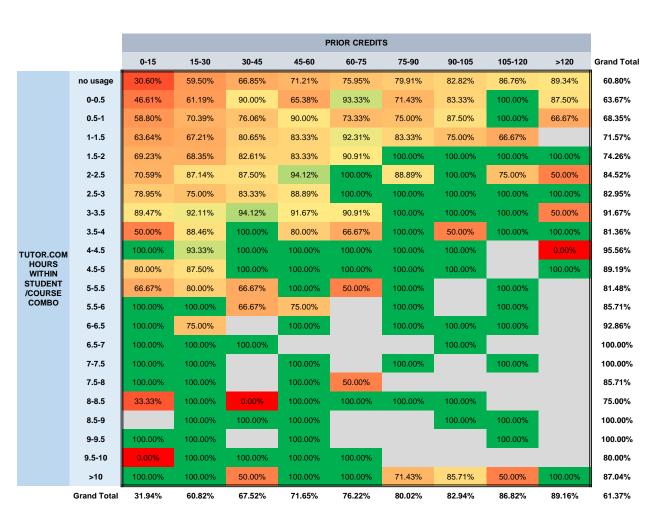


Marginal impact of ongoing usage

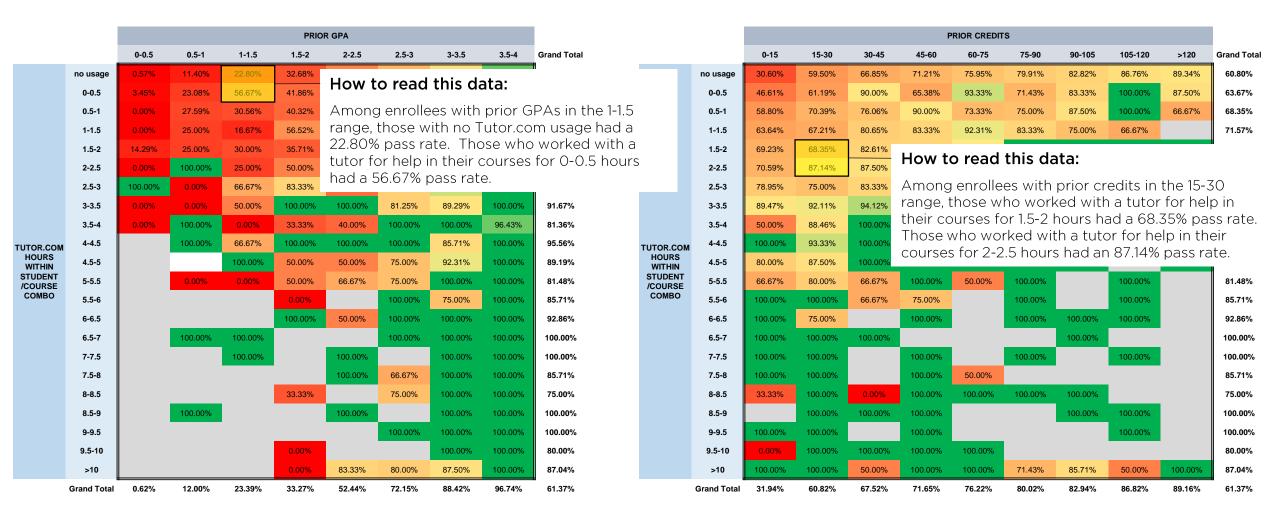


Pass rate by usage level & prior GPA/credits





Pass rate by usage level & prior GPA/credits



Predictive power of Early Alert notifications

Student population	n of student/course combinations	share of combinations receiving passing grade
Did not use Tutor.com	47244	60.80%
Used Tutor.com	1952	75.00%
Did not receive Early Alert in first two sessions*	1813	75.57%
Received Early Alert in first two sessions*	139	67.63%
Did not have additional sessions for same course (after first two)	68	57.35%
Had additional sessions for same course (after first two)	71	77.46%

^{*}Excluding asynchronous essay reviews, which are not included in the Tutor.com Early Alert system

How to read this data:

47,244 enrollees <u>did not</u> use Tutor.com for help in their courses, and had a 60.80% pass rate. 1,952 enrollees <u>did</u> use Tutor.com for help in their courses, and had a 75.00% pass rate.

Within the "Used Tutor.com" population, 1,813 enrollees <u>did not</u> receive an Early Alert (indicating a lack of prerequisite knowledge or content mastery) in their first two live tutoring sessions; these enrollees had a 75.57% pass rate. 139 enrollees <u>did</u> receive an Early Alert in their first two sessions; these enrollees had a 67.63% pass rate.

Within the "Received Early Alert in first two sessions" population, 68 enrollees had no additional tutoring sessions after the first two, and had a 57.35% pass rate. 71 enrollees had at least one additional tutoring session, and had a 77.46% pass rate

