This is a table that I created based on spss file called, distal\_1.sav. I used the variable called, “Group” that Kyusang created based on the LTA results. Hope this is the right file and right way of interpreting it. I think the main point that we want to make here is that students change. Below is a table that disaggregates the “Group” variable by gender and underrepresented status. I wrote the paragraph below based on the table. The part highlighted in yellow is what I considered “change”. I don’t think we need a picture…main point is that folks change (even though actually more people don’t change).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | female | male | minority | not minority | female, minority | female, not minority | male, minority | male, not minority |
| stay high | 13 | 23 | 16 | 18 | 12 | 14 | 20 | 24 |
| stay medium | 35 | 22 | 36 | 27 | 43 | 33 | 30 | 20 |
| stay low | 4 | 4 | 3 | 4 | 5 | 4 | 2 | 4 |
| start high and end low | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 5 |
| start high and end medium | 9 | 13 | 14 | 10 | 9 | 9 | 20 | 11 |
| start low and end high | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 |
| start low and end medium | 6 | 3 | 5 | 4 | 7 | 6 | 3 | 2 |
| start medium and end high | 14 | 18 | 11 | 18 | 13 | 16 | 9 | 20 |
| start medium and end low | 12 | 13 | 9 | 14 | 7 | 14 | 10 | 14 |

Students change their attitudes toward mathematics and science from seventh through twelfth grade. For example, 47% of females and 53% of males and 45% of underrepresented students and 52% of not-underrepresented students (White and Asian) changed their attitudes toward mathematics and science from middle to high school. Approximately similar percentages of males and females started off with a positive attitude in seventh grade and changed their attitude to less positive attitudes in tenth and twelfth grade. There were also students who did not change their attitudes towards mathematics and science from seventh through twelfth grade. 23% of males are likely to be consistently in the “high” group and 24% of not-underrepresented (White and Asian) males are more likely to be consistently in the “high” group. In contrast, only 13% of females were consistently in the “high” group and 12% of not-underrepresented females. This suggests that with few exceptions, most students change their attitudes toward mathematics and science –for example, starting “high” and ending “low”. This is encouraging for educators in that attitudes toward mathematics and science is not consistent and thus a malleable factor that can be changed and modified as students’ progress through middle and high school.

Other points to make:

Knowing where students end in 12th grade is not enough.

Knowing where students start in 7th is not enough. Need to consider who pipeline.

LCA results looking at each grade alone.

Looking at grade 7

|  |  |  |  |
| --- | --- | --- | --- |
| Comparison of Distal Outcomes | |  |  |
| Classes | Math at Grade8 | Science at Grade 8 | STEM Career |
| **Positive (Class 1)** | 56.923 (0.499) | 56.795 (0.496) | 0.13 (0.016) |
| **Qualified Positive (Class 2)** | 55.283 (0.413) | 55.46 (0.421) | 0.075 (0.013) |
| **Indifferent (Class 3)** | 50.855 (0.521) | 52.048 (0.532) | 0.075 (0.016) |
| **Dim (Class 4)** | 51.639 (0.512) | 51.814 (0.545) | 0.037 (0.012) |

Grade 10

|  |  |  |  |
| --- | --- | --- | --- |
| Comparison of Distal Outcomes | |  |  |
| Classes | Math at Grade11 | Science at Grade11 | STEM Career |
| **Positive (Class 1)** | 71.750 (0.636) | 68.492 (0.560) | 0.139 (0.017) |
| **Qualified Positive (Class 2)** | 68.791 (0.763) | 63.917 (0.690) | 0.071 (0.016) |
| **Indifferent (Class 3)** | 67.624 (0.890) | 65.212 (0.772) | 0.062 (0.016) |
| **Dim (Class 4)** | 62.619 (0.951) | 60.364 (0.807) | 0.028 (0.011) |

Grade 12

|  |  |
| --- | --- |
| Classes | STEM Career |
| **Positive (Class 1)** | 0.168 (0.022) |
| **Qualified Positive (Class 2)** | 0.070 (0.021) |
| **Indifferent (Class 3)** | 0.046 (0.019) |
| **Dim (Class 4)** | 0.044 (0.021) |

The percentage of positive that end up in a STEM career increases by 3% when looking at Grade 12 compared to just grade 7 or 10.

Show prototypical students how they move through the classes.

LTA results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Grade 10 |  |  |
| Grade 7 | Positive | Qualified positive | Indifferent | Dim |
| Positive | **0.526** | 0.145 | 0.235 | 0.094 |
| Qualified positive | 0.212 | **0.374** | 0.184 | 0.231 |
| Indifferent | 0.364 | 0.138 | **0.361** | 0.138 |
| Dim | 0.119 | 0.222 | 0.2 | **0.459** |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Grade12 |  |  |  |
| Grade 10 | Positive | Qualified positive | Indifferent | Dim |
| Positive | **0.692** | 0.05 | 0.185 | 0.073 |
| Qualified positive | 0.174 | **0.61** | 0.089 | 0.127 |
| Indifferent | 0.265 | 0.128 | **0.444** | 0.164 |
| Dim | 0.061 | 0.132 | 0.189 | **0.618** |