**Characteristics of Students Who Do Not Do Homework**

**Research Initiation Grant: Increasing Student Engagement in Homework**

**Introduction**
- All freshman engineering students take a common Introductory Engineering course.
- A customized web-based homework system is used (Schleter and Bennett, 2006).
- Recently a bonus system (Schilling, 2010) was implemented:
  - Students receive a 10% bonus for homework problems completed 24 hours or more in advance of the due date.

**Introduction**:
- All freshman engineering students take a common Introductory Engineering course.
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**Measurement**

**Quantitative Data**
- Students’ completion rate of homework
- Students’ preparation
  - Math ACT Score
  - High School courses
- Class performance
  - Math ACT Score
  - High School courses
- Class engagement -- clicker responses
- Persistence -- grit survey (Duckworth and Quinn, 2009)

**Qualitative Data**
- Students who were completing less than 80% of their homework in Fall 2012 were invited to participate in a 30-45 minute interview.
  - 20 out of 100 students participated in the interview.

**The present study**
- This paper examines characteristics of students who do not complete at least 80% of homework.
  - Interview
  - Data analysis of relationship among
    - Students’ completion rate of homework
    - Students’ preparation
    - Class performance
    - Class engagement
    - Persistance

**Results**

**Group**

<table>
<thead>
<tr>
<th></th>
<th>Passing Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>All (N=407)</td>
<td>82.8%</td>
</tr>
<tr>
<td>Students completed at least 80% of the homework</td>
<td>96.9%</td>
</tr>
<tr>
<td>Students did less than 80% of the homework</td>
<td>33.3%</td>
</tr>
</tbody>
</table>

**Relationship between Parameters and Homework Performance**
- Recitation Participation
- Lecture Participation
- Exam Average
- Math ACT Average
- Math ACT Score
- Average

**Relationship between HS courses and Homework Performance**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>&lt; 80 Average</th>
<th>&gt; 80 Average</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS Math Class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had Calculus</td>
<td>62%</td>
<td>79%</td>
<td></td>
</tr>
<tr>
<td>Quality of Math Class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All: 3.82</td>
<td>All: 4.19</td>
<td>All: p &lt; .05</td>
<td></td>
</tr>
<tr>
<td>Calc: 3.88</td>
<td>Calc: 4.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HS Physics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP: 13%</td>
<td>AP: 22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None: 29%</td>
<td>None: 19%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: 58%</td>
<td>Other: 59%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of Physics Class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All: 3.82</td>
<td>All: 4.19</td>
<td>All: p &lt; .05</td>
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</table>

**Conclusions**

**Students who do not homework:**
- Do not have good high school background
- Have slightly less persistence
- Not participating as much in class.

Identifying the characteristics helps develop appropriate intervention techniques.

**Interview Result**

Based on a preliminary analysis, several reasons were identified for why students do not do homework, which are listed below:
- Time management
- Struggling with academic studies
- Part-time job
- Too many credit hours
- Transition problems
- Family problem which takes time
- Other activities which take time, such as religious activities and band rehearsal
- Do not like physics
- Get frustrated because of their low scores on tests and homework
- EF151 homework is harder and more than other courses’ homework
- Easily distracted
- No physics class in high school
- Like/use early homework bonus, mostly, and then less during semester

The process of completing complex HW frustrates them and they cannot get help immediately at a key point.