Student Analytics
A Deloitte proposition to reduce student drop-outs
Our proposition
Student Analytics enables universities to help students achieve higher student success

Situation
Higher Education has a wicked problem. On average, one in three students drops out, and so far no single measure has proven successful. Universities have spend decades optimizing one-size-fits all solutions to deal with ever growing enrollments and need to transform. Students demand a more tailor-made, personalized approach, but universities often lack the funds for true customer intimacy.

Solution
Insights and predictions from student data can be used to transform student services to become proactive and personalized, without the costs associated with one-on-one tutoring. This will enable recruiters, counselors, tutors and teachers to focus their limited time effectively on those students who require attention, and thereby help students achieve higher study success.

A proven approach
Our method designs in three clear steps who to target, based on their profile, and intervene accordingly.

Benefits
• Personal tutoring, mentoring and advice for all students
• Lower the risk of students dropping out
• Stay ahead of the competition
Vision Student Analytics

By improving insights in the individual needs of students, Deloitte faciliates personal and proactive student counseling

**Student Analytics**

**Better insight into students:**
- Background
- Motivation
- Study progress
- Stumbling blocks

**Analysed in relation to:**
- Study success
- Actual need for counseling

**Win-Win** Better insights lead to increased effectiveness and efficiency
Vision Student Analytics

Probabilities for future study success can logically be assessed with students’ profiles and behavior

Eric’s profile
- Eric went to the orientation day and registered early for his Economics study
- A year before, Eric was studying Law at a different university
- Eric does not pass the well-known stumbling block: statistics
- Eric has less EC than his cohort

Eric’s Study success
- Drop out probability: 56%
- Diploma in 4 yrs probability: 20%

Jennifer’s profile
- Jennifer is 18 years old and came directly from high school to study English
- Especially for English and Mathematics she had exceptional marks
- During the first half year, Jennifer gains all the EC possible

Jennifer’s study success
- Drop out probability: 5%
- Diploma in 4 yrs probability: 93%
Approach Student Analytics

Our method designs in three clear steps 1) who to target, 2) based on their profile, and 3) intervene accordingly.
Prediction

Our model estimates the drop out probability at 7 moments in the first year based on a logical and balanced choice of variables

Formula of the prediction: Dropout ~ Gender + Avg high school grades + Looking for information before + Looking for information after + s(Age) + s(Days between application and admission) + Faculty + s(EC | period) + s(EC – Avg. EC cohort) + Amount of retakes + Final BSA
Prediction

Throughout the year, the most accurate up-to-date drop out probability is available for each student.

**Drop out probability per student**
Background

Based on student behavior in the first year over 18.000 students are segmented into 11 groups using an advanced visual segmentation technique.

1) Quitters
   Older (male) students from good upbringing, orientate not before but during their studies. Often do not retake exams. High drop-out rate. (#636)

2) Party students
   Mostly men from high-income households. Relatively large number of insufficient grades and retakes. Varying drop-out and diploma rates (#1.199)

3) Ideal students
   Young students with great starts, low drop-out and high diplomas. (#1.471)

4) Future stars
   Potentially well performing students, but with a relatively low diploma rate. (#1.309)

5) No show-ers
   Diverse segment with high grades and drop-outs, regardless (#740)

6) Average Joes
   Men from thriving, provincial areas with low high school grades. Low drop-out rate and high diploma rate. (#1.126)

7) Decent students
   From low income households, women with decent high school grades. Low drop-out and high diploma rate. (#2.259)

8) Language test drop-outs
   Men, 20+ with bad high school grades. Did not actively orientate on their studies and get insufficient marks on the language test. (#2.986)

9) Strong starters
   A good start, but varying drop-out numbers and diploma's (#1.776)

10) Re-sitters
    Slow starters who obtain the minimum number of ECs to pass. Re-sit often. Not dropping-out but also not obtaining their diploma in four years. (#3.181)

11) Zealous girls
    Mostly girls with not-so-great highschool results with a slow start. They end the first year with succes, don't drop out and obtain their diploma. (#2.186)
Background

All available variables can be explored for correlative relationships

Age at start of study

Drop-out after one year

Bachelor's diploma in 4 years

Average high school grades
Interventions

Help the right student proactively, throughout the year and as early as possible with targeted counseling

<table>
<thead>
<tr>
<th>Help the right student</th>
<th>Reach 75% of your drop outs by the fourth period by actively targeting 25% of your students with counseling</th>
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</thead>
<tbody>
<tr>
<td>Proactively</td>
<td>Take action to optimize drop out and diploma rates.</td>
</tr>
<tr>
<td>Throughout the year</td>
<td>Throughout the year a student’s outlook changes. Adjust your counseling accordingly.</td>
</tr>
<tr>
<td>As early as possible</td>
<td>Act as early as possible to identify students with a high risk for dropping out. After period 2 a better prediction is available than current semester advice.</td>
</tr>
<tr>
<td>With targeted counseling</td>
<td>Adapt student counseling to <em>why the student has a higher risk</em> and <em>who the student is</em>.</td>
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</table>
Interventions

Together with the client we define interventions for particular student segments and give advice on processes, policy, service & strategy of the institute.

Define:

- Student Counseling

VU examples:
- Reach out to older students to discuss their particular situation and challenges
- Invite re-sitters as early as possible to a special study skills program.

Transform:

- Process, Policy & Service

VU examples:
- Embed student success data (e.g. predictions) in the tools and systems (e.g. portals, SIS) on need-to-know-basis
- Create a Student Success Center that uses Student Analytics to target the right student segments
- Uniformize all relevant student data registration

Optimize:

- Strategy

VU examples:
- Use proactive and personalized student services as a unique selling point for your University.
- Optimize student recruitment by aligning the insights of the current population with the strategy of marketing and recruitment efforts.

Results

- Pro-active and targeted student counseling
- Improvements that lead to better student experience and success measures
- Fact-based strategy update
The benefits

The benefits for students and insights into their behavior translate into an opportunity for the (vocational) university

- Tailored recruitment, mentoring, tutoring and study advice
- High transparency of information
- Find the right program
- Less risk of dropping-out
- Greater success

- Higher student retention and graduation rates (also leading to financial gain through funding and operational efficiency)
- Lower costs to give better advice and more targeted services
- Optimized processes, policies and service based on insights in student behavior
- Target the right students and optimize strategy
- A necessary change - over the next couple of years, data driven will become the norm
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