Example Report: Alignment in a Large Scale Course

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The EDLI team has been working with data from a 500+ student course to explore what changes to the course might result in the **optimum workload** for students to achieve their learning goals. We focused on exam scores as a summative measure of students' achievement of course learning outcomes. Our primary suggestions are:

- Consider the alignment between in-class components and assessments
- Focus on opportunities for meaningful student engagement
- Consider streamlining the D2L experience

Student Course Experience

There were 441 participants in the survey, which asked Likert-type (agree-disagree), demographics, and open-ended qualitative questions. We asked about students' perceptions of: alignment between grades and effort, course interest, and workload on scales from 1-5.

Alignment Scale

average: 3.17, Standard Deviation: 0.95

Alignment responses and student's exam numerator grades correlated (correlation coeff. = 0.36), which could indicate that students who performed better on exams felt that their overall grade was a more accurate representation of their effort and work in the course.

Interest Scale

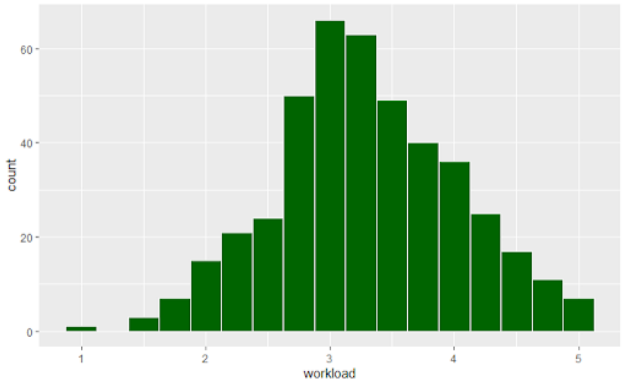
average: 3.3, standard deviation: 0.88

General interest was higher for students with in the major that the course is in (correlation coeff. = 0.25). Students in this major also report increased amount of time and effort put into activities, as well as the frequency that they are completed.

Workload Scale

average: 3.3, standard deviation: 0.74 (pictured)

This scale measured the intensity of students' workload. The majority of responses fell in the middle. Workload is slightly negatively correlated with interest



Course Activities

We asked students about their time spent, effort expended, and frequency of engaging in six course activities: watching the study guide video, reading assigned chapters, completing the SmartBook readings and study questions, completing the homework, attending class sessions, and viewing the lecture slides. Students estimated their time spent on each individual activity, with the majority being less than 10 hours.

Activity	How Often Completed (scale 1-5)	Effort Put In (%)	Time Spent (minutes)
SmartBook Readings + Study Questions	4.76	88.35%	83 min
Lecture Slides	3.79	66.72%	31 min
Homework	3.69	91.29%	44 min
Attending Class	3.42	61.49%	119 min
Study Guide Video	2.61	54.60%	23 min

Regression of Activities and Outcomes

How are students' exam grades influenced by how often they report engaging with various course materials and other student characteristics?

- GPA is by far the biggest predictor; good students are consistent across courses
- Frequently reviewing the study guide appears to reduce students' exam grades
  - Likely a passive activity, but makes students feel like they are prepared
- Completing in-class thought exercises and questions improves students' exam scores
- Completing the homework may reduce students' exam grades
  - Completing the homework w/o using notes or the book doesn't have this effect
- Consistently focusing on the reading assignments may improve students' exam scores

Variable	Estimate	P-value
GPA	**37.01**	**<0.001**
Reviewing the study guide	**-5.87**	**0.03**
Completing in-class thought exercises	**5.34**	**0.05**
Completing the reading assignments	4.7	0.07
Completing homework	-4.66	0.08
Viewing the success video	12.66	0.14
Reviewing lecture slides	-3.53	0.23
Completing homework w/o notes or book	2.3	0.38
Completing the SmartBook assignments	0.18	0.97
Attending class	-0.36	0.91

Adjusted R^2: 0.093 | 85 d.f.

F-statistic p-value <0.001

A Note on Exams

Certain components of exam design may mean that we are measuring students' English language proficiency, reading abilities, and/or test taking abilities rather than their understanding of concepts. Some more in-depth analysis (called Rasch analysis) of students' exam responses could demonstrate whether exams require adjustments to most accurately measure students' understanding of course materials.

Suggestion 1: Alignment

Consider the alignment between in-class components and assessments

Students could use more opportunities to practice exam-like questions and well-aligned in-class exercises

- Continue encouraging students to complete the homework without using their notes/books
- Consider developing some in-class quizzes (for credit or not) with exam-like questions
- Continue to go over difficult exam questions to demonstrate why answers are correct

  Consider doing something similar with homework questions
- Some tweaks could be made to the use of SmartBook, though the data is less clear here

Student Responses: Lecture

Most responses on this element mention that the lecture does not aid in content comprehension or exam preparedness. Though some do find the real-world examples insightful, the amount of lecture time dedicated to discussing examples is too much.

> **I wish the lecture would be more relevant to the topics covered in the week's reading chapters.**

Student Responses: Smartbook

Students reported contradictory experiences with the SmartBook, with most who mentioned it describing that it was not worth the time spent on it and a minority finding it highly useful.

Student Responses: Exam

Students recommend different components for exam preparation. Comments reference practice exams or exam prep during the lecture sessions.

> **Maybe we can add a review of questions in exam on d2l. Sometimes I need to know why I was wrong.**

> **Access to some sort of resource for practice questions during exam week.**

Student Responses: Homework

Students recommend engagement with homework for clarification.

> **Explain homework questions in class.**

Suggestion 2: Meaningful Student Engagement

We have some suggestions for **ways to streamline the course to focus on the most meaningful student engagement opportunities.**

- Remove or shorten video study guides

  The ways that students are engaging with these seems to reduce their time spent in other exam prep activities and negatively impacts their exam scores

- Use homework questions to create in-class quizzes

  This would provide lower-stakes ways for students to engage with the material than exams, but provide accountability for them to engage without their notes/books to encourage active learning

- Incentivize in-class thought exercises and questions

  One way to do this is by associating the in-class questions with points via mechanisms such as iClicker

  Another way might be using homework questions as in-class thought exercises so students who participate will have a head start on their assignments

> **"Maybe more interactive elements? [This major] is in such a physically based field, hard to understand some of this stuff without seeing it.**

Suggestion 3: Streamlining D2L

Some updates to the D2L structure of the course could go a long way in reducing overwhelm in students' experiences without needing significant changes to other course components.

- Include an initial overview of typical weekly assignments could be a helpful onboarding item
- Streamlining the "How to be Successful" video, or incorporating it into a course overview to give students a look into what they will be doing, and how to be successful in a direct way

  Create a handout with main points from video for students to refer back to quickly

- Reduce words in Titles
- Weekly checklists could include only actionable items, any non-action reminders (such as canceled readings) can be put in the introduction text for the week
- Content folders could be organized by each week, with subfolders if needed, so everything students need for the week is in one place

Next Steps with EDLI

Based on our findings, here are some ways we might be able to help further:

- Further exploration of exam scores, including Rasch analysis, to show how well tests are measuring course concepts and learning objectives
- Conducting course observations to make additional suggestions on alignment and in-class exercises
- Providing support in updating D2L structure