



Deep Learning by Freshmen and Seniors

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Deep learning refers to a learning focus on the meaning of information, not just the substance of it. This report looks at deep learning by freshmen and seniors: overall deep learning, higher order thinking, integrative learning, and reflective learning. It compares freshmen and seniors over the period from 2005 to 2009.¹ The four measures of deep learning, one scale and three subscales, come from the National Survey of Student Engagement. They can range from 0 to 100. Each of the three subscales is created from a set of NSSE questions. The scale of overall deep learning is the average of the three subscales.

The higher order thinking subscale includes the extent to which students' classes emphasize analysis of ideas, experiences, or theories; organization of ideas and information into complex interpretations and relationships; making judgments about the value of information, arguments, or methods; and application of theories or concepts to practical problems or new situations.

The integrative learning subscale includes how often students worked on a paper requiring integration of ideas from various sources; included diverse perspectives in coursework; put together ideas or concepts from different classes; and discussed ideas from courses outside of class with faculty and with others (students, family members, etc.).

The reflective learning subscale includes how often students examined the strengths and weakness of their own views; tried to better understand someone else's view by imagining their perspective; and learned something that changed the way they understood an issue or concept.

Key findings

Deep learning overall

- There was virtually no net change from 2005 to 2009 in the average overall deep learning scale, for either freshmen or seniors (see Table 1 and Figure 1).
- Although the gap was relatively small, the overall

¹ See Appendix A for number of students and response rates by year.

deep learning scale was consistently higher for seniors than for freshmen.

- In 2009, the overall deep learning scale was 63.5 for freshmen and 67.6 for seniors.

Higher order thinking

- There was no net change in the higher order thinking subscale over the period from 2005 to 2009 (see Figure 2).
- The senior subscale of higher order thinking was slightly higher than that of freshmen in 2009.
- In 2009, the average higher order thinking subscale was 71.7 for freshmen and 74.2 for seniors.

Integrative learning

- For freshmen, there was a very slight net decline in the integrative learning subscale from 2005 to 2009. There was no change in the subscale for seniors (see Figure 3).
- The integrative learning subscale was consistently and substantially higher for seniors than for freshmen.
- In 2009, the average integrative learning subscale was 56.3 for freshmen and 63.6 for seniors.

Reflective learning

- For freshmen, there was virtually no net change in the reflective learning subscale, but for seniors there was a slight net decline (see Figure 4).
- The senior reflective learning subscale was higher than that for freshmen, but the gap narrowed to a barely meaningful difference in 2009.
- In 2009, the average reflective learning subscale was 62.3 for freshmen and 64.6 for seniors.

Conclusions

- There was almost no net change in the scale or subscales over the period from 2005 to 2009. This suggests a stability over time in the amount of deep learning required in Loyola classes.
- Seniors did consistently more deep learning than have freshmen (although the gap is very small on higher order thinking and reflective learning). These differences would be expected, because the classes taken by seniors would require more deep learning.

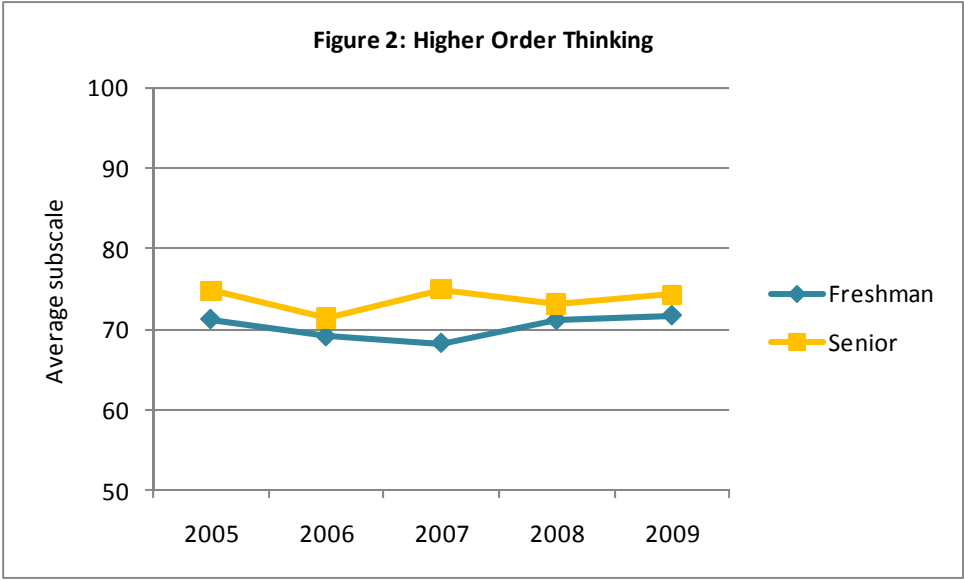
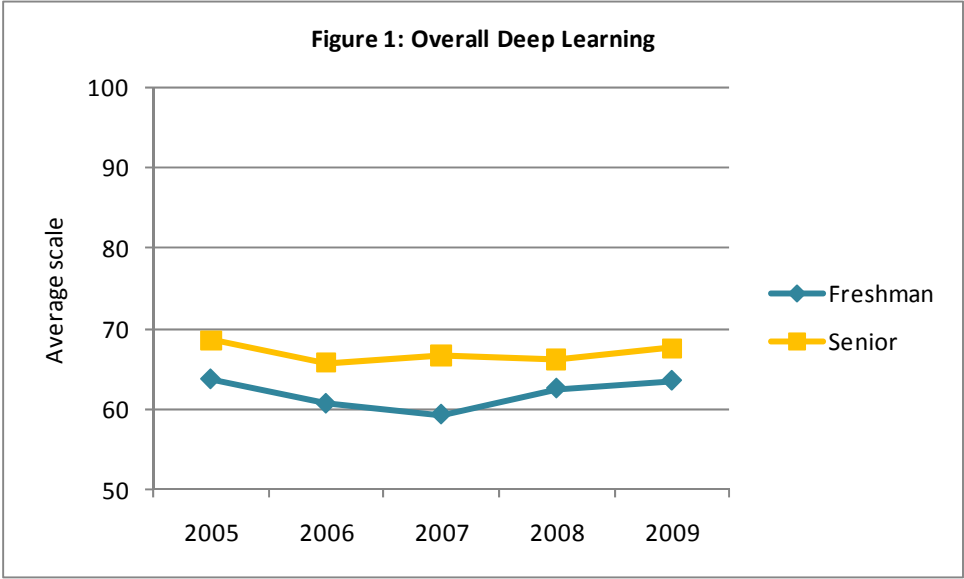
- Seniors would be required to do more integrative learning, especially as they are expected to draw on

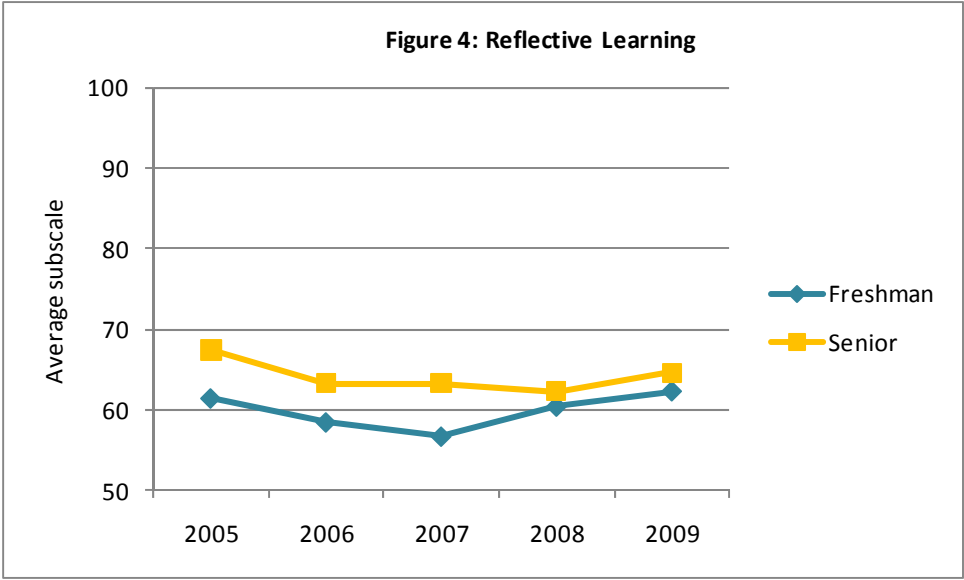
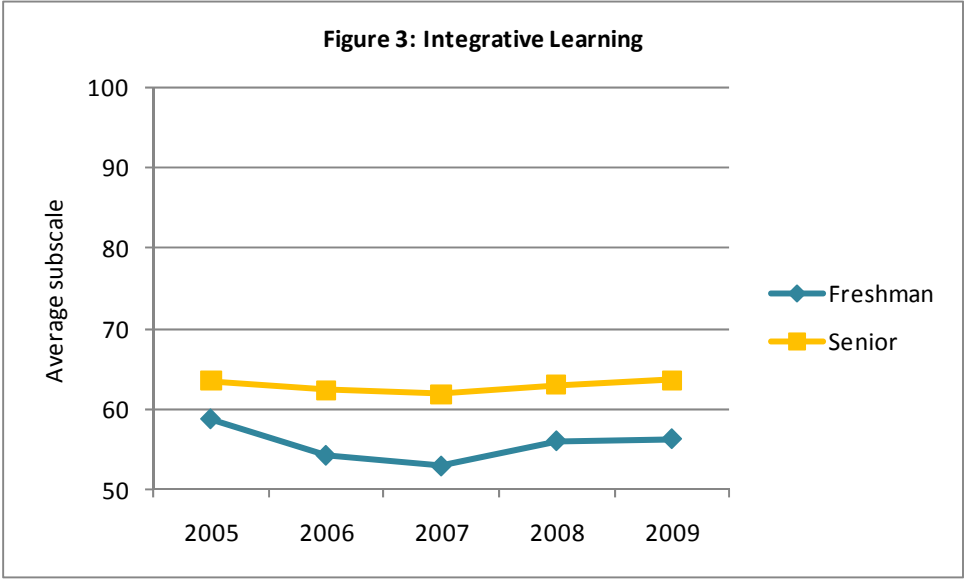
more cumulative knowledge and skills than are freshmen.

Table 1 Average Deep Learning Scale and Subscales, by Class and Year					
<i>Scale from 0 to 100</i>	2005	2006	2007	2008	2009
Overall deep learning scale*					
Freshman	63.7	60.7	59.3	62.6	63.5
Senior	68.6	65.7	66.7	66.2	67.6
Higher order thinking subscale					
Freshman	71.2	69.0	68.2	71.1	71.7
Senior	74.8	71.4	74.9	73.1	74.2
Integrative learning subscale					
Freshman	58.8	54.3	53.0	56.1	56.3
Senior	63.5	62.4	61.9	63.0	63.6
Reflective learning subscale					
Freshman	61.4	58.4	56.7	60.4	62.3
Senior	67.4	63.3	63.3	62.3	64.6

Source: National Survey of Student Engagement, 2005-09

* Average of the three subscales





Appendix A Number of Respondents and Response Rates, by Class and Year					
	2005	2006	2007	2008	2009
Freshmen					
Respondents	151	534	853	1051	593
Response rate	44%	38%	45%	49%	30%
Seniors					
Respondents	146	480	571	850	707
Response rate	45%	39%	33%	46%	35%

Source: National Survey of Student Engagement, 2005-09