



CSU, CHICO BY THE NUMBERS

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Exploring the role of MEMORIZATION in Higher Education using NSSE and FSSE Survey Data

To what degree is memorization emphasized in coursework at CSU, Chico? And what is the proper role of memorization in learning, vis a vis other learning practice? Here we use data for CSU, Chico from the **2020 National Survey of Student Engagement (NSSE)** and **Faculty Survey of Student Engagement (FSSE)** to explore these important questions.

What are the NSSE and FSSE Surveys?

Both the NSSE and FSSE surveys are conducted annually by the Indiana University Center for Postsecondary Research, and collect information from students and faculty at hundreds of participating American four-year colleges and universities. Questions on the survey are intended to assess the degree to which undergraduates are exposed to educational “best practices” in their higher education experiences. Because both students and faculty provide responses on their perceptions and experiences regarding these best practices, it can be useful to compare these perceptions, as the discussion of 2020 data below will illustrate.

How heavily is memorization emphasized in CSU, Chico coursework?

Based on responses to the 2020 NSSE and FSSE surveys, faculty and students at CSU, Chico appear to have quite different senses of the degree to which memorization is emphasized in their courses.

As shown in Figure 1, roughly **18 percent of surveyed faculty teaching lower-division courses** and **27 percent of surveyed faculty teaching upper-division courses** responded that they emphasize memorization to a relatively high degree in their courses. In contrast, as shown in Figure 2, roughly **74 percent of surveyed freshmen** and **60 percent of**

surveyed seniors believe that memorization is relatively highly emphasized in their coursework.

| Course Level | Very Little / Some | Quite a Bit / Very Much |
|----------------|--------------------|-------------------------|
| Lower Division | 45 81.82% | 10 18.18% |
| Upper Division | 66 72.53% | 25 27.47% |

Figure 1. 2020 FSSE Faculty Responses by Course Level – Perceived Emphasis on Memorization

| Class Year | Very Little / Some | Quite a Bit / Very Much |
|------------|--------------------|-------------------------|
| Freshman | 43 25.75% | 124 74.25% |
| Sophomore | 9 34.62% | 17 65.38% |
| Junior | 24 38.10% | 39 61.90% |
| Senior | 169 40.43% | 249 59.57% |
| 5+ | 10 41.67% | 14 58.33% |

Figure 2. 2020 NSSE Student Responses by Class Year – Perceived Emphasis on Memorization

One noteworthy trend that we can observe is the *inverse relationship between perceived emphasis on memorization and student class year*. That is, freshmen and sophomores as a whole tended to feel that memorization was emphasized more frequently than juniors and seniors did. While it is not immediately clear *why* students and faculty might report such different experiences, we can use theory and other survey data to better understand the role of memorization in the learning process.

Memorization vs. “Understanding” in Education

When considering the degree to which memorization should be emphasized in higher education, many of us might **assume that memorization refers only to rote memorization**, which connotes the development of uncritical and isolated knowledge through passive learning exercises. This mode of learning is commonly contrasted with more “active” learning modes that

emphasize integrative understanding of relationships, theories, and processes. As Kaminske (2020) and Kember (1996) note¹, such a contrast implies that students learn through one of two mutually-exclusive means: a “**surface**” approach with no intention to develop critical knowledge, and a “**deep**” approach that promises to develop new ideas and concepts. Recent cognitive development research has shown that **the relationship between memory and learning is often much more iterative**. For example, our understanding of the *distinctiveness* of individual things, such as elements on the periodic table, is enhanced by an understanding of the *relationships* between these things, such as how chemical reactivity works. Memorization practices, then, are *not always* used at the expense of effective learning – rather, we can think of memorization as a sometimes-necessary but insufficient component of effective learning, and one that should be paired with more integrative and reflective learning practices.

Additional Evidence from NSSE and FSSE

Let’s return to the 2020 NSSE and FSSE survey data to see how CSU, Chico faculty and students feel about the use of other, “deeper” learning practices in their classrooms. Figures 3 and 4 provide faculty and student responses, respectively, regarding the degree to which their courses emphasized “**analyzing an idea, experience, or line of reasoning in depth by examining its parts.**” Figures 5 and 6 respectively provide faculty and student responses regarding the degree to which courses emphasized “**connect[ing] ideas from your courses to your prior experiences and knowledge.**”

As can be seen from each set of figures, majorities of both faculty and students feel that these two additional practices were emphasized relatively highly. These data provide tentative evidence that an emphasis on memorization does not necessarily come at the expense of other learning practices. However, we can also note another important trend:

upper-division students and course instructors reported that these integrative and holistic practices were emphasized more frequently than freshmen and lower-division instructors did. While memorization and learning are not always mutually exclusive, these data suggest that the balance between memorization and other learning techniques may vary by class year and course level.

| Course Level | Very Little / Some | Quite a Bit / Very Much |
|----------------|--------------------|-------------------------|
| Lower Division | 17 30.91% | 38 69.09% |
| Upper Division | 22 24.18% | 69 75.82% |

Figure 3. 2020 FSSE Faculty Responses by Course Level – Perceived Emphasis on Higher Order Learning

| Class Year | Very Little / Some | Quite a Bit / Very Much |
|------------|--------------------|-------------------------|
| Freshman | 57 34.13% | 110 65.87% |
| Sophomore | 7 28.00% | 18 72.00% |
| Junior | 15 23.81% | 48 76.19% |
| Senior | 97 23.21% | 321 76.79% |
| 5+ | 7 29.17% | 17 70.83% |

Figure 4. 2020 NSSE Student Responses by Class Year – Perceived Emphasis on Higher Order Learning

| Course Level | Not Important / Somewhat Important | Important / Very Important |
|----------------|------------------------------------|----------------------------|
| Lower Division | 4 7.27% | 51 92.73% |
| Upper Division | 4 4.26% | 90 95.74% |

Figure 5. 2020 FSSE Faculty Responses by Course Level – Perceived Emphasis on Reflective and Integrative Learning

| Class Year | Very Little / Some | Quite a Bit / Very Much |
|------------|--------------------|-------------------------|
| Freshman | 42 24.71% | 128 75.29% |
| Sophomore | 3 11.54% | 23 88.46% |
| Junior | 9 14.29% | 54 85.71% |
| Senior | 58 13.68% | 366 86.32% |
| 5+ | 3 11.54% | 23 88.46% |

Figure 6. 2020 NSSE Student Responses by Class Year – Perceived Emphasis on Reflective and Integrative Learning

¹ Kaminske, A. (2020). The Art and Science of Memory. Accessed online at <https://www.learningscientists.org/blog/2020/6/7-1> on 9/12/19.

Kember, D. (1996). The intention to both memorise and understand: Another approach to learning? *Higher Education*, 31, 341-354.