AUBURN
Office of the Provost
*Academic Assessment*

## AUBURN UNIVERSITY LEARNING ASSISTANT PROGRAM (AULAP) REVIEW
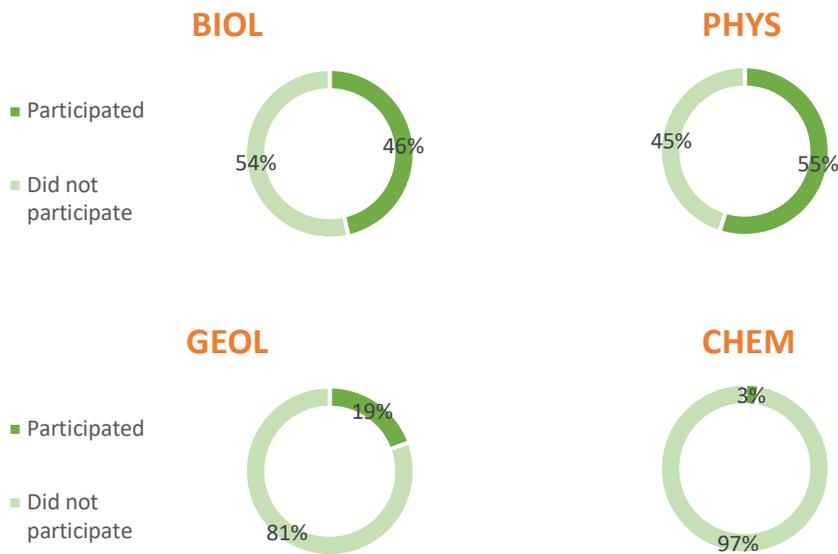### (SPRING 2021)

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### PURPOSE

The purpose of the current report is to assess quality of Auburn University Learning Assistant Program and propose areas for improvement based on data gathered from:

1) 131 responses from Learning Assistants (LAs)*, and
2) 1,641 responses from students* in LA-supported courses

Student participation by discipline:



**BIOL**
- Participated
- Did not participate

46%
54%

**PHYS**
45%
55%

**GEOL**
- Participated
- Did not participate

19%
81%

**CHEM**
3%
97%

*Both surveys (one for LAs and one for students) were conducted in Spring 2021.*

## (1) LEARNING ASSISTANTS (LAs)

First, **four correlation analyses** were conducted on LA-reported data but were found to be **non-significant** (i.e., $p > .05$; *N* ranges from 122 to 130):

- Correlation between **interaction time with the course instructor** and **willingness to serve again as LA**
- Correlation between **interaction time with the course instructor** and **sense of belonging to AU**
- Correlation between **interaction time with the course instructor** and **sense of belonging to class**
- Correlation between **interaction time with the course instructor** and **sense of belonging to STEM**

However, the statistical non-significance was a result of lack of variance in willingness to serve again as LAs as well as in interaction time with the course instructor as:

**84%**

- o **84%** of LAs **interacted** with the **course instructor weekly or biweekly** (63% - weekly)

**83%**

- o **83%** of LAs indicated they were **willing to serve again as LAs**

Therefore, the lack of variance in this case is positive as it reflects regular interaction between LAs and the course instructors and willingness of a great majority of LAs to serve again in their current roles.

### LEADERSHIP, TEAM SKILLS, AND HAPPINESS

Additional positive impacts of being an LA:

- o **98.4%** of LAs **agree to strongly agree** that being an LA has made them a **better leader**

- o **96.9%** of LAs **agree to strongly agree** that being an LA has made them a **better team player**

- o **97.7%** of LAs **agree to strongly agree** that they are **happy** to be an LA for their class

## STEM OUTCOMES

96.9% (*N*=127) of surveyed LAs were a STEM major (97.6% of them indicated planning to remain in their STEM major). Therefore, outcomes more closely related to STEM were also examined:

- **99.2%** of LAs report **slight to large positive impact** of being an LA **on content understanding**

- **99.2%** of LAs report **slight to large positive impact** of being an LA **on personal interest in STEM fields**

- **99.2%** of LAs report **slight to large positive impact** of being an LA **on skills in STEM** such as **teamwork, critical thinking,** and **problem solving**

- **98.4%** of LAs report **slight to large positive impact** of being an LA **on skills in science communication**

## (2) STUDENTS IN LA-SUPPORTED COURSES

82.8% (*N*=1359) of surveyed students in LA-supported courses were a STEM major (97.4% of them indicated planning to remain in their STEM major).

The next step was examining ratings of LA-supported class activities. Students were asked to categorize 13 most common LA-supported activities into three groups: 1) we did this and it was helpful, 2) we did this and it was NOT helpful, and 3) we never did this. Table below displays ratings of all activities within each of the three categories. *Note: Numbers in parentheses reflect number of students who placed each particular LA-supported activity into respective column/category.*

The table below displays top 8 helpful LA-supported activities as well as top 8 activities that were done least frequently were. Given that the numbers of ratings in the "non-helpful activities category" are much smaller than the numbers in the other two categories, the rest of the report will focus solely on the "helpful" and "never done" activities. For a table with the rankings of all 13 activities and all 3 categories, see Appendix A.

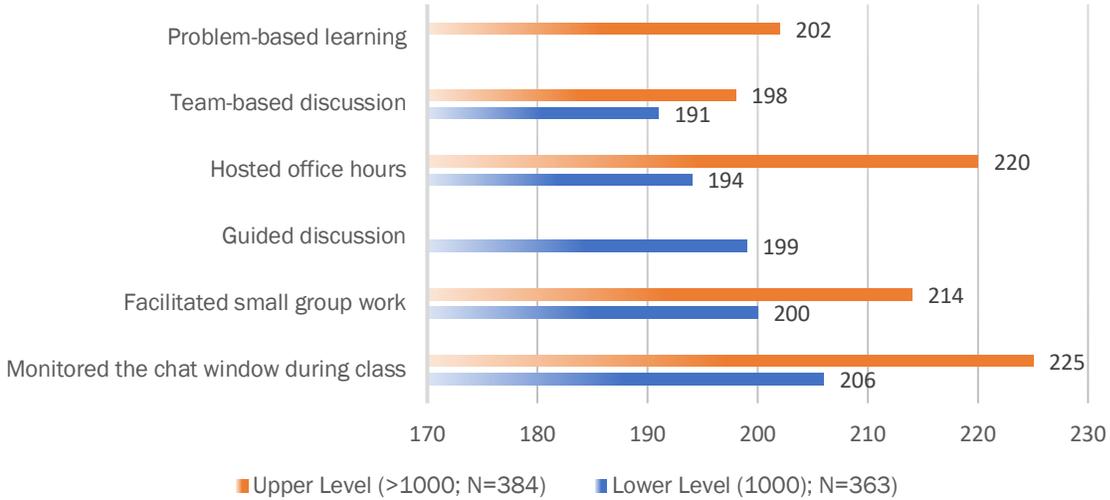| Ratings of LA-supported activities ||
| --- | --- |
| **We did this in my LA-supported course and it was very helpful** | **We never did this in my LA-supported course** |
| Hosted office hours (921) | Assisted with field trip(s) (962) |
| Monitored the chat window during class (883) | Provided the class with short review videos (692) |
| Problem-based learning (857) | Project-based learning (628) |
| Facilitated small group work (842) | Provided feedback on homework (607) |
| Guided discussion (796) | Hosted recitation (588) |
| Team-based discussion (795) | Created worksheets and/or handouts (371) |
| Created study guide (782) | Created study guide (355) |
| Created worksheets and/or handouts (752) | Guided discussion (299) |

### HIGH-PERFORMING STUDENTS

To get the most meaningful insights on the ratings of LA-supported activities, we decided to focus on the high-performing students, that is students who reported they expected to receive an A in their respective class(es).

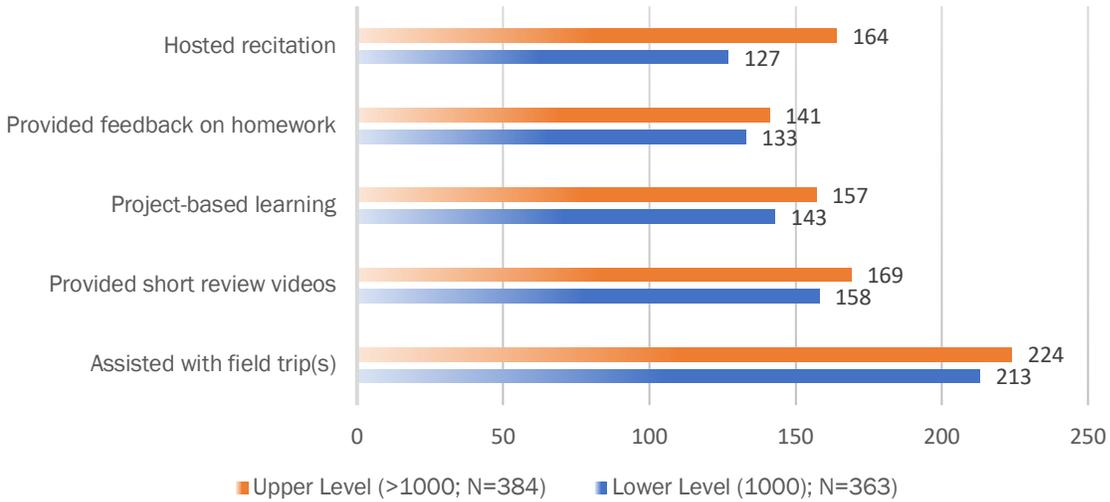| Expected Grade | A | B | C | D | F |
| --- | --- | --- | --- | --- | --- |
| N | 747 | 596 | 248 | 43 | 7 |

We then examined high performing students' ratings of LA-supported activities across course levels (lower vs. upper-course level) and disciplines (BIOL, CHEM, GEOL, and PHYS). Figures and table below demonstrate that the top five helpful and the top five least frequently done activities were pretty similar across course levels and disciplines. There was no overlap between the helpful and non-implemented categories, which indicates a positive trend of LAs actively implementing activities that most students find helpful. However, one area for improvement would be encouraging all LA-supported courses that have not been implementing the helpful activities from below table and figures to do so in the future.

## Top 5 **HELPFUL** LA-Supported Activities by Course Level



| Activity | Upper Level (>1000; N=384) | Lower Level (1000); N=363) |
|---|---|---|
| Problem-based learning | 202 | |
| Team-based discussion | 198 | 191 |
| Hosted office hours | 220 | 194 |
| Guided discussion | | 199 |
| Facilitated small group work | 214 | 200 |
| Monitored the chat window during class | 225 | 206 |

## Top 5 **LEAST FREQUENTLY DONE** LA-Supported Activities by Course Level



| Activity | Upper Level (>1000; N=384) | Lower Level (1000); N=363) |
|---|---|---|
| Hosted recitation | 164 | 127 |
| Provided feedback on homework | 141 | 133 |
| Project-based learning | 157 | 143 |
| Provided short review videos | 169 | 158 |
| Assisted with field trip(s) | 224 | 213 |

| Top 5 LA activities by discipline | | |
|---|---|---|
| **Discipline** | **We did this in my LA-supported course and it was very helpful** | **We never did this in my LA-supported course** |
| BIOL (N=609) | Monitored the chat window during class (382) | Assisted with field trip(s) (354) |
| | Facilitated small group work (373) | Provided short review videos (253) |
| | Team-based discussion (352) | Hosted recitation (244) |
| | Hosted office hours (346) | Project-based learning (226) |
| | Guided discussion (333) | Provided feedback on homework (223) |
| CHEM (N=14) | Hosted office hours (8) | Project-based learning (10) |
| | Problem-based learning (7) | Provided short review videos (9) |
| | Facilitated small group work (7) | Assisted with field trip(s) (9) |
| | Guided discussion (7) | Team-based discussion (7) |
| | Monitored the chat window during class (6) | Provided feedback on homework; Created worksheets and/or handouts; Hosted recitation (5) |
| GEOL (N=22) | Guided discussion (8) | Project-based learning (10) |
| | Hosted office hours (7) | Assisted with field trip(s) (9) |
| | Created study guide (7) | Problem-based learning (8) |
| | Monitored the chat window during class (6) | Team-based discussion (8) |
| | Provided short review videos (6) | Provided feedback on homework; Created worksheets and/or handouts (8) |
| PHYS (N=102) | Hosted office hours (53) | Assisted with field trip(s) (65) |
| | Problem-based learning (51) | Provided short review videos (58) |
| | Created worksheets and/or handouts (40) | Project-based learning (54) |
| | Monitored the chat window during class (37) | Team-based discussion (39) |
| | Created study guide (36) | Provided feedback on homework (38) |

## INTERACTION WITH LAs AND RELATED OUTCOMES

The correlation between the **average per-class interaction with LA** and **expected grade** was examined but was **non-significant** (t(1421)=-0.699, r=-.019, p=.48). Nonetheless, more time spent interacting with LA per class seems to result in a higher expected grade for those expecting to receive grades A, B, or C in their respective class. On the other hand, the effect seems to be the opposite for those expecting to receive a D or an F, in which case the interaction with LA might be less "traditional" and could be indicative of students failing the class. No patterns or significant differences were observed in in-class or out-of-class interaction times (estimations made for the span of the whole semester).

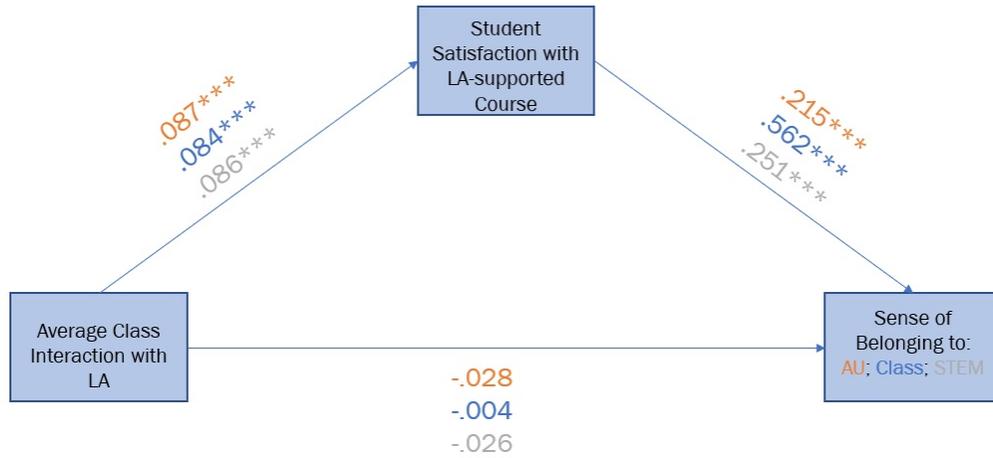| Expected Grade | N | In-class interaction during the whole semester (in hours) | | | | Out-of-class interaction during the whole semester (in hours) | | | | Average per-class interaction (minutes) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | <5 | 5-10 | 10-15 | >15 | <1 | 1-5 | 5-10 | >10 | |
| A | 741 | 59% | 24% | 9% | 8% | 67% | 22% | 9% | 2% | **14.30** |
| B | 591 | 64% | 20% | 8% | 8% | 60% | 30% | 8% | 2% | **13.18** |
| C | 246 | 62% | 21% | 8% | 9% | 63% | 27% | 8% | 2% | **12.48** |
| D | 43 | 63% | 18% | 12% | 7% | 56% | 37% | 7% | 0% | 16.62 |
| F | 7 | 43% | 29% | 14% | 14% | 29% | 14% | 29% | 28% | 17.29 |

Further examination of correlations among the Average Per-Class Interaction Time with LA, Student Satisfaction with LA-Supported Course, and Sense of Belonging (to Auburn University, Class, and STEM) implied an indirect relationship between the average per-class interaction time with LA and all three sense of belonging variables through student satisfaction with LA-supported course.

Thus, three mediation models were run revealing statistically significant indirect effects of the Average Per-Class Interaction Time with LA on Sense of Belonging (to Auburn University, Class, and STEM) through Student Satisfaction with LA-Supported Course. To clarify, **the average per-class time spent interacting with LA increased student satisfaction with LA-supported course**, which then **increased students' sense of belonging to Auburn University, Class, and STEM**. The relationship between interaction time and sense of belonging was fully mediated through student satisfaction in all three cases (meaning that the direct effect of interaction time on sense of belonging was non-significant while the indirect effect through student satisfaction was statistically significant). As expected, the strongest effect was observed in the case of sense of belonging to class (as the most proximal outcome), followed by sense of belonging to STEM, and Auburn University. Specific model estimates can be seen in the figure below (color coding: Auburn University[1], Class[2], STEM[3]).

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[1] Sense of belonging to AU model: The standardized indirect effect was .019. We tested the significance of this indirect effect using bootstrapping procedures. Unstandardized indirect effects were computed for each of 1000 bootstrapped samples, and the 95% confidence interval ranged from .010 to .029. Thus, the indirect effect was statistically significant.

[2] Sense of belonging to Class model: The standardized indirect effect was .047. We tested the significance of this indirect effect using bootstrapping procedures. Unstandardized indirect effects were computed for each of 1000 bootstrapped samples, and the 95% confidence interval ranged from .032 to .062. Thus, the indirect effect was statistically significant.

[3] Sense of belonging to STEM model: The standardized indirect effect was .022. We tested the significance of this indirect effect using bootstrapping procedures. Unstandardized indirect effects were computed for each of 1000 bootstrapped samples, and the 95% confidence interval ranged from .012 to .034. Thus, the indirect effect was statistically significant.

Student Satisfaction with LA-supported Course

Average Class Interaction with LA

Sense of Belonging to: AU; Class; STEM

.087***
.084***
.086***

.215***
.562***
.251***

-.028
-.004
-.026

ab=0.019, p<.001 ; total=-0.01, p=.51
ab=0.047, p<.001 ; total=0.043, p<.001
ab=0.022, p<.001 ; total=-0.004, p=.79

*** p<.001

## SUMMARY

Auburn University Learning Assistant Program (AULAP) benefits Learning Assistants (LAs) in the areas of leadership skills, team skills, and overall satisfaction (reflected in their willingness to serve again as LA and happiness with the assignment). The program also has a positive impact on their STEM-specific outcomes such as content understanding, personal interest in STEM fields, skills in STEM and science communication.

Additionally, AULAP allows students to engage in helpful LA-supported activities such as LA-hosted office hours, problem-based learning, small group work, and team-based discussions. Student-reported ratings of LA activities can be used for further improvement of the program through encouraging implementation of activities students rated as helpful. Finally, AULAP shows a positive impact on students' sense of belonging to class, STEM, and Auburn University as the interaction time with LA is positively related to student class satisfaction, which then has a positive impact on students' sense of belonging.

Appendix A

*Note: Numbers in parentheses reflect number of students who placed each particular LA-supported activity into respective column/category.*

| Ratings of LA-supported activities | | |
|---|---|---|
| We did this in my LA-supported course and it was very helpful | We did this in my LA-supported course and it was NOT helpful | We never did this in my LA-supported course |
| Hosted office hours (921) | Hosted office hours (163) | Assisted with field trip(s) (962) |
| Monitored the chat window during class (883) | Facilitated small group work (109) | Provided the class with short review videos (692) |
| Problem-based learning (857) | Team-based discussion (102) | Project-based learning (628) |
| Facilitated small group work (842) | Monitored the chat window during class (96) | Provided feedback on homework (607) |
| Guided discussion (796) | Guided discussion (84) | Hosted recitation (588) |
| Team-based discussion (795) | Hosted recitation (84) | Created worksheets and/or handouts (371) |
| Created study guide (782) | Project-based learning (83) | Created study guide (355) |
| Created worksheets and/or handouts (752) | Problem-based learning (73) | Guided discussion (299) |
| Provided feedback on homework (457) | Provided feedback on homework (70) | Team-based discussion (293) |
| Hosted recitation (438) | Created worksheets and/or handouts (63) | Facilitated small group work (253) |
| Project-based learning (383) | Created study guide (58) | Problem-based learning (228) |
| Provided the class with short review videos (372) | Provided the class with short review videos (56) | Monitored the chat window during class (226) |
| Assisted with field trip(s) (95) | Assisted with field trip(s) (20) | Hosted office hours (121) |