Dynamic Identification Checklists In The Anatomy Dissection Lab – Approach to Enhance Formative Feedback Through Multi-Faceted Communication and Self-Monitoring

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Introduction

- Large-group anatomy instruction presents challenges in monitoring student progress and understanding.[1]
- Summative assessment predominates, limiting formative feedback during learning.[2]
- Checklists improve learning, but dynamic checklist communication tools remain understudied.[3]

Aims and Objectives

Using gross anatomy as a model for basic science medical education, this study aims to:

1. Develop a novel efficient, timely, and convenient mechanism for communication of students' dissection progress to peers and faculty via Google workspaces.
2. Evaluate effectiveness of using Google Workspaces as a communication tool for use in dissection, exam preparation and instruction.

Methods

- **Prior to Fall 2023 (Traditional)**: Team resources for each lab included Lab Identification Checklist (LIC) spreadsheets with check boxes for tracking dissection of >1000 total structures, which were tagged on identification-based practical examinations.
- **Fall 2023 (Novel):** LICs were offered in shared Google Sheets (Google LLC, Mountainview, CA), with a tab for each team's lists (Fig 3). For each structure, formulas and App Script code generated the number of teams who found the structure with a list of their specific donors (Fig 4). The data were dynamic and openly accessible to students and faculty.

Methods (continued)

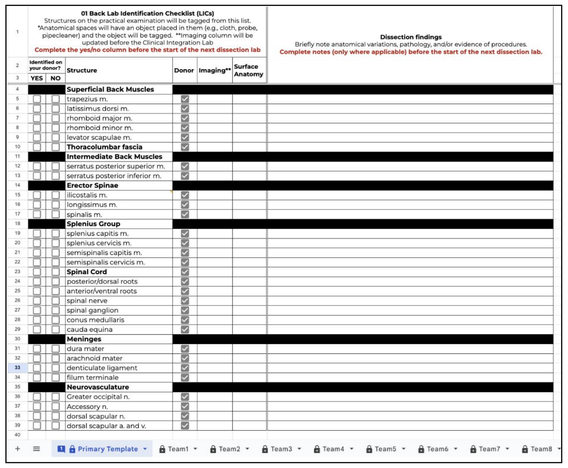

Figure 1. Sample Individual Team Lists. Each list includes columns for students to check yes/no for finding a structure, the list of required structures, and notes of dissection findings.

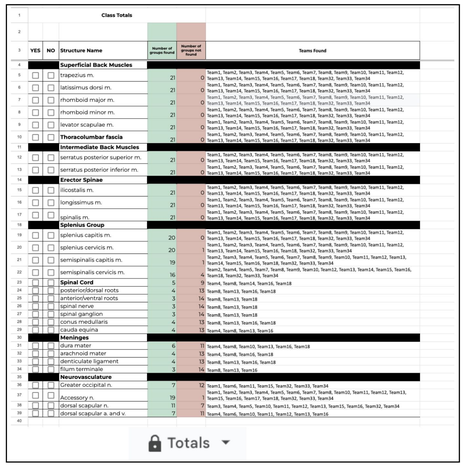

Figure 2. Sample Aggregate Data from 21 Teams. The totals tab includes information about the number of teams that did/did not find a structure and a list of teams that did find a structure

- Quasi-experimental cross-sectional comparison of first-year medical students using static checklists (Class of 2026, n=125) versus dynamic Google Sheets–based checklists (Class of 2027, n=125) during gross anatomy dissection.
- A 19-item Likert survey evaluated self-monitoring, peer communication, and student–faculty communication; responses were collected anonymously after course completion.
- Descriptive statistics and Mann–Whitney U tests compared cohorts ($p < 0.05$); study approved by the OU IRB.

Results

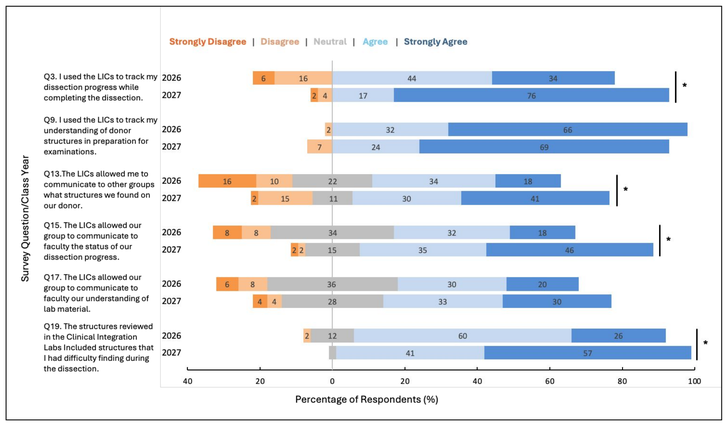

Figure 3. The distribution of student responses by class year (2026 vs 2027) regarding their agreement with using Lab Identification Checklists (LICs) as communication tools. Responses were collected on a 5-point Likert scale: Strongly Disagree (orange), Disagree (light orange), Neutral (gray), Agree (light blue), and Strongly Agree (dark blue). Asterisks (*) denote survey items with a statistically significant difference between class years ($p < 0.05$) determined with Mann-Whitney U Test.

Results (continued)

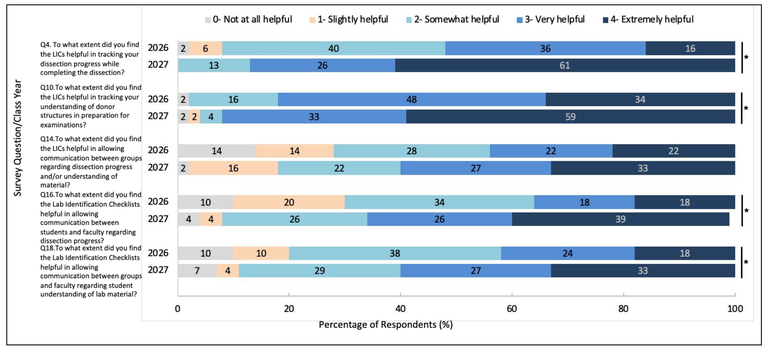

Figure 4. Student responses from Class Years 2026 and 2027 regarding the perceived helpfulness of Lab Identification Checklists (LICs) for communication. Responses were rated on a 5-point Likert scale: 0 = Not at all helpful (light gray), 1 = Slightly helpful (light orange), 2 = Somewhat helpful (light blue), 3 = Very helpful (medium blue), and 4 = Extremely helpful (dark blue). Asterisks (*) denote statistically significant differences between class years ($p < 0.05$) determined with Mann Whitney U Test.

Conclusions

- Students using dynamic checklists reported improved self-monitoring and dissection progress tracking, with significantly higher agreement and helpfulness ratings.
- Real-time shared data enhanced inter-group collaboration and improved communication of dissection findings, while reducing reports of the tool being "not helpful."
- Student-faculty communication improved, with increased perceived usefulness for conveying progress and learning needs and supporting targeted review of difficult structures.
- Dynamic checklists strengthened multidirectional communication and formative feedback in the anatomy lab, supporting a learner-centered approach to large-group medical education.

References

1. Thomas S, Subramaniam S, Abraham M, Too L, Beh L. Trials of large group teaching in Malaysian private universities: a cross-sectional study of teaching medicine and other disciplines. BMC Res Notes. 2011;4:337. doi:10.1186/1756-0500-4-337
2. Shin M, Prasad A, Sabo G, et al. Anatomy education in US medical schools: before, during, and beyond COVID-19. BMC Med Educ. 2022;22:103. doi:10.1186/s12909-022-03177-1
3. Hofer RE, Nikolaus OB, Pawlina W. Using checklists in a gross anatomy laboratory improves learning outcomes and dissection quality. Anat Sci Educ. 2011;4(5):249-255. doi:10.1002/ase.243

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