

Integrating Generative AI into Large-enrollment GIScience Online courses to Enhance Student Self-learning and Engagement

Shivanand Balram, PhD

University Lecturer

Geographic Information Science

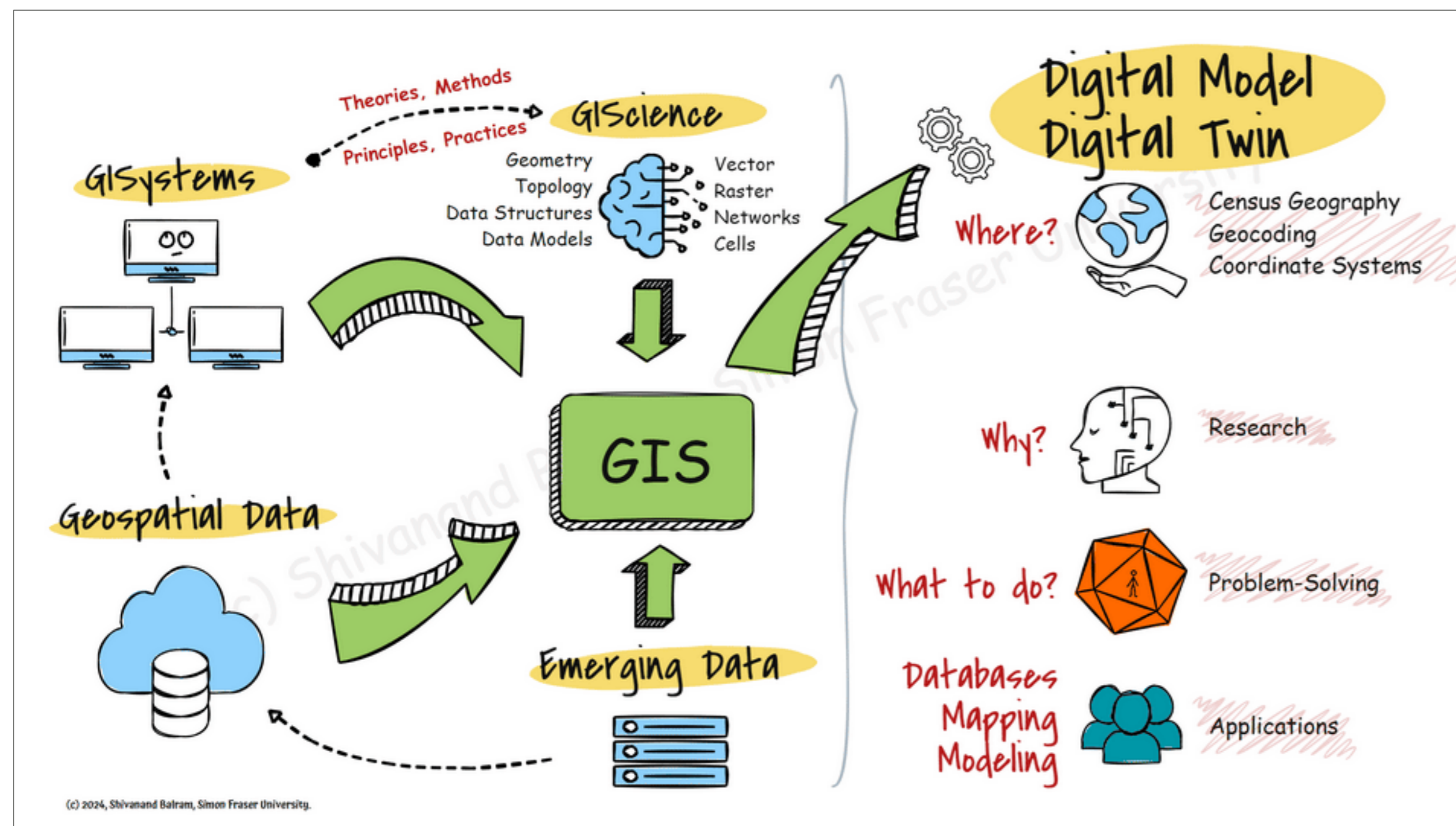
Simon Fraser University, Burnaby Campus

sbalram1@sfu.ca



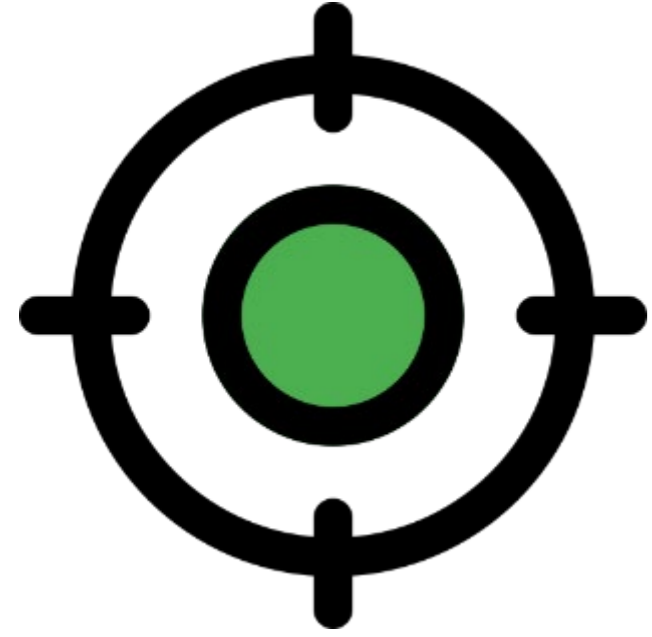
- 1 Needs of Online GIScience Courses
- 2 Problem Focus
- 3 Study Context
- 4 Perspectives of Students (Self-Learning)
- 5 Perspectives of Students (Engagement)
- 6 Managing Academic Integrity at Scale
- 7 Conclusion

Needs of Online GIScience Courses



- GIS applicable to many disciplines
- Students from multiple backgrounds
- GIS learning is practical and quantitative
- Demand for more learning opportunities
- Need for well-designed online delivery

Problem Focus



- **How to use Generative AI to enhance student self-learning?**
- **How to use Generative AI to enhance student engagement?**
- **How to maintain academic integrity at scale?**

Study Context

Fully Online
asynchronous
12 weeks



GEOG 150 DIGITAL EARTH (Fall 2024)



293
(capped 300)



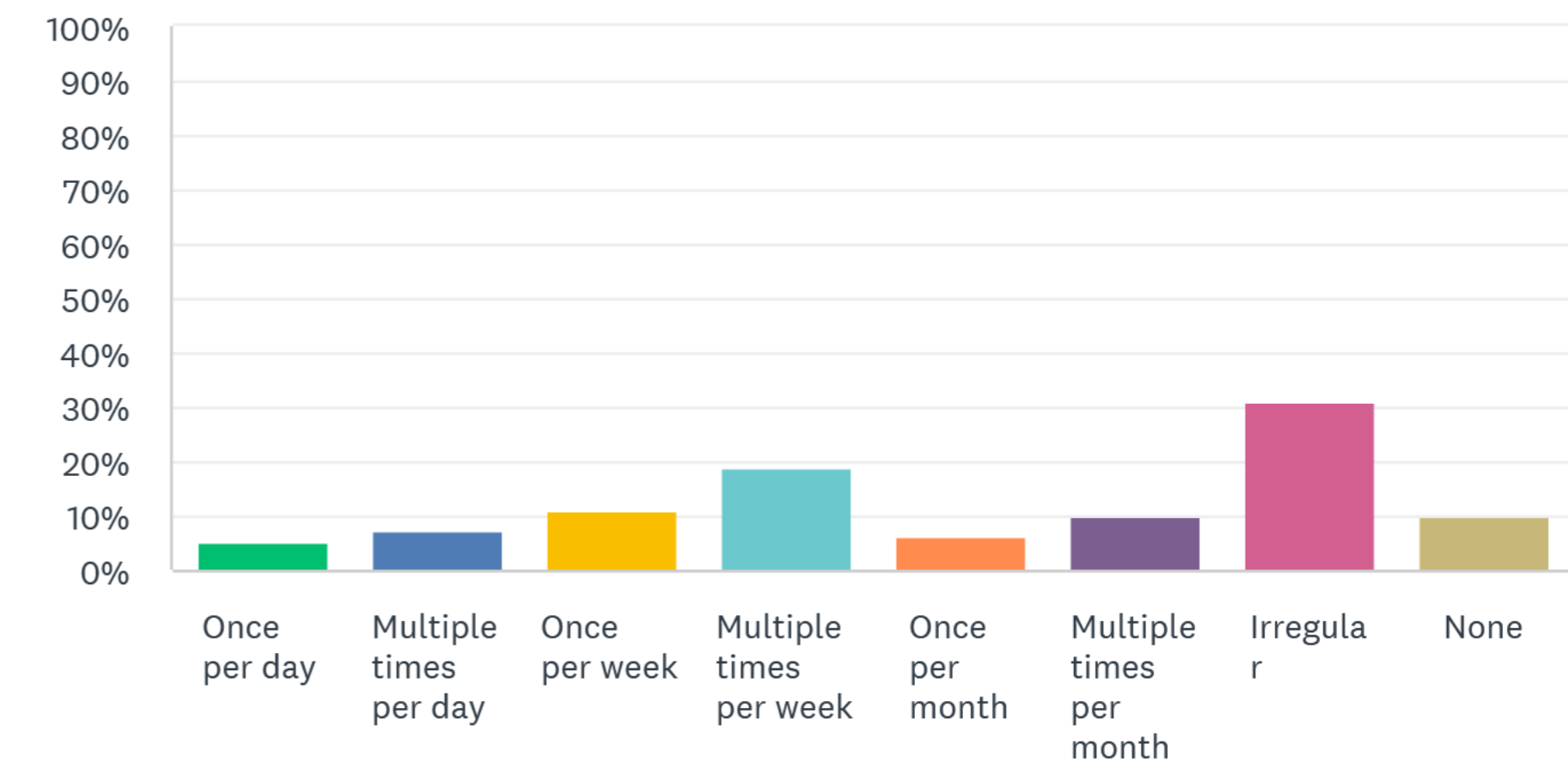
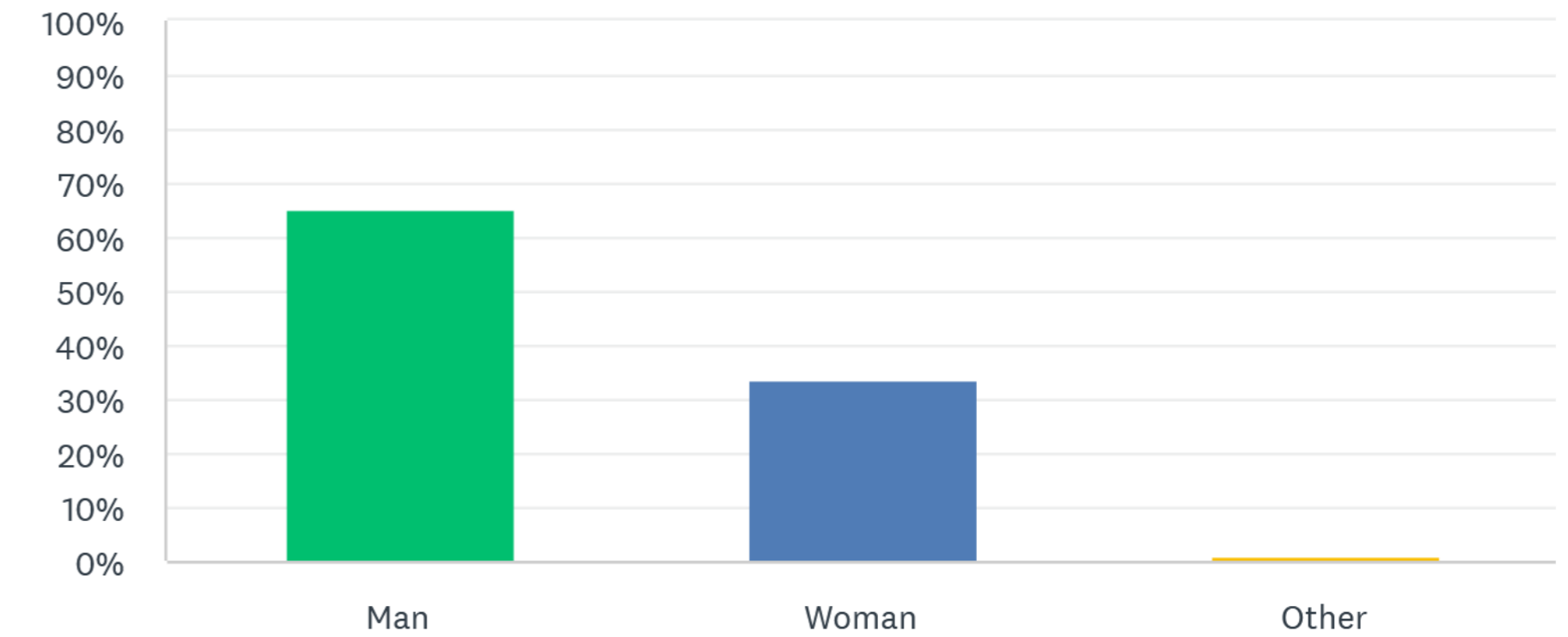
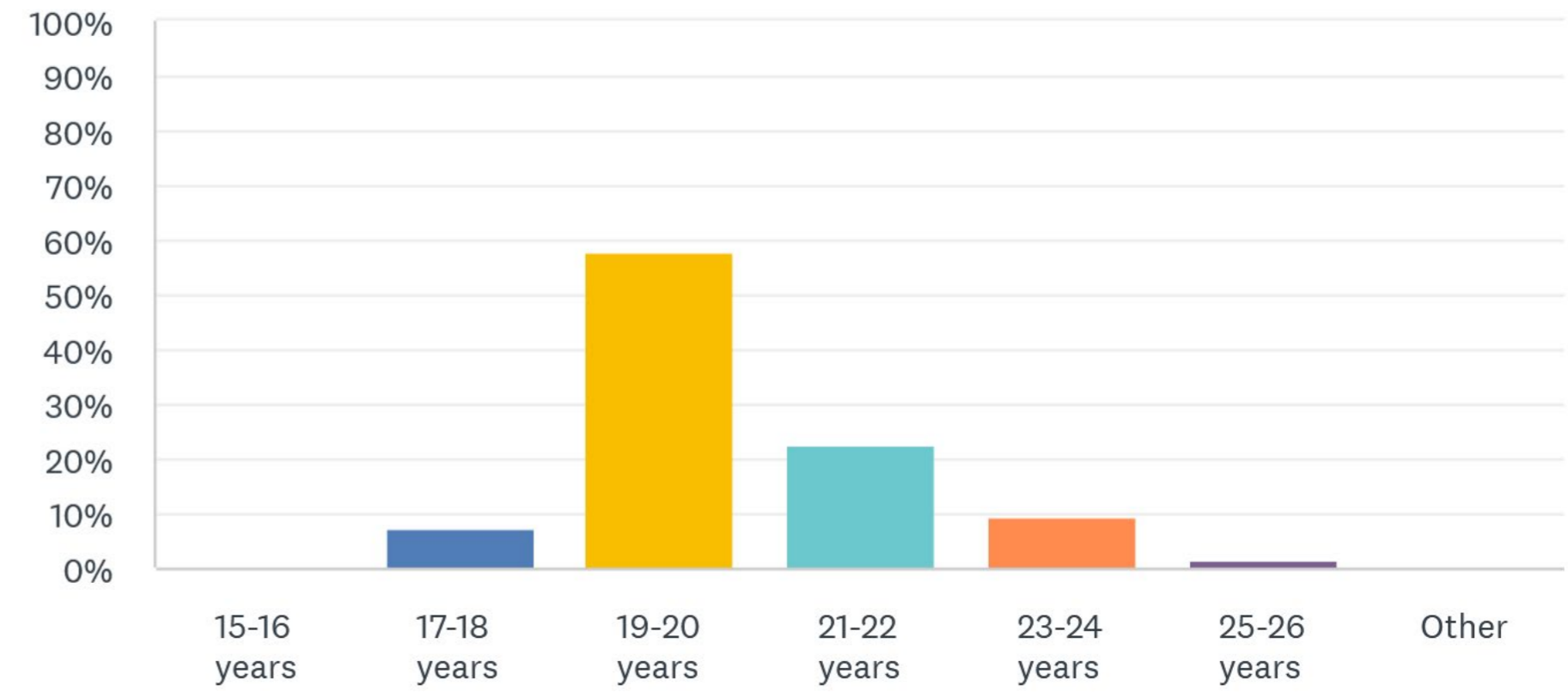
10 Quizzes

05 Discussions

03 Data Assignments

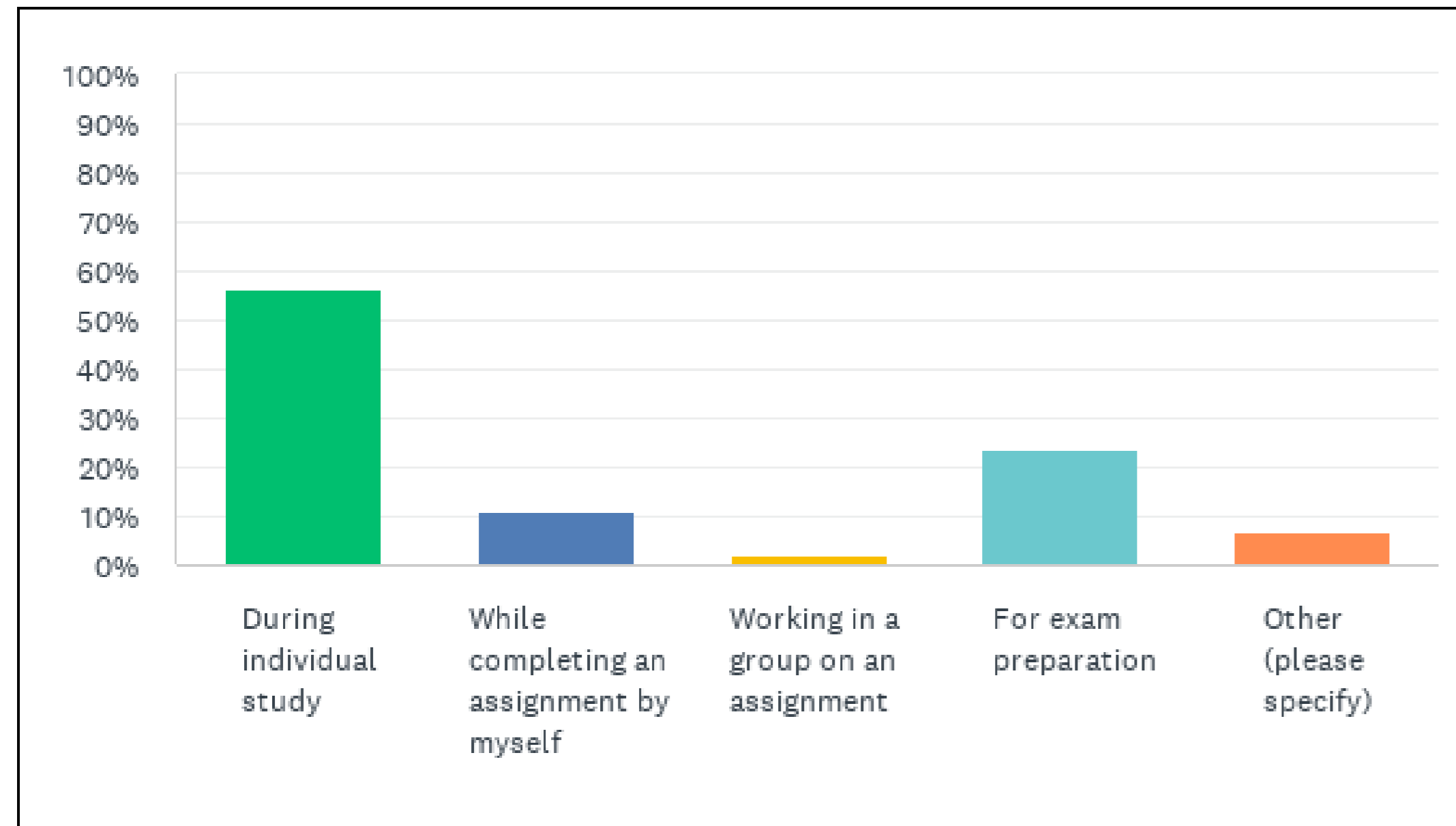
01 Midterm Exam

01 Final Exam



Perspectives of Students (Self-Learning)

Main uses of Gen AI (n = 259 of 293 students)

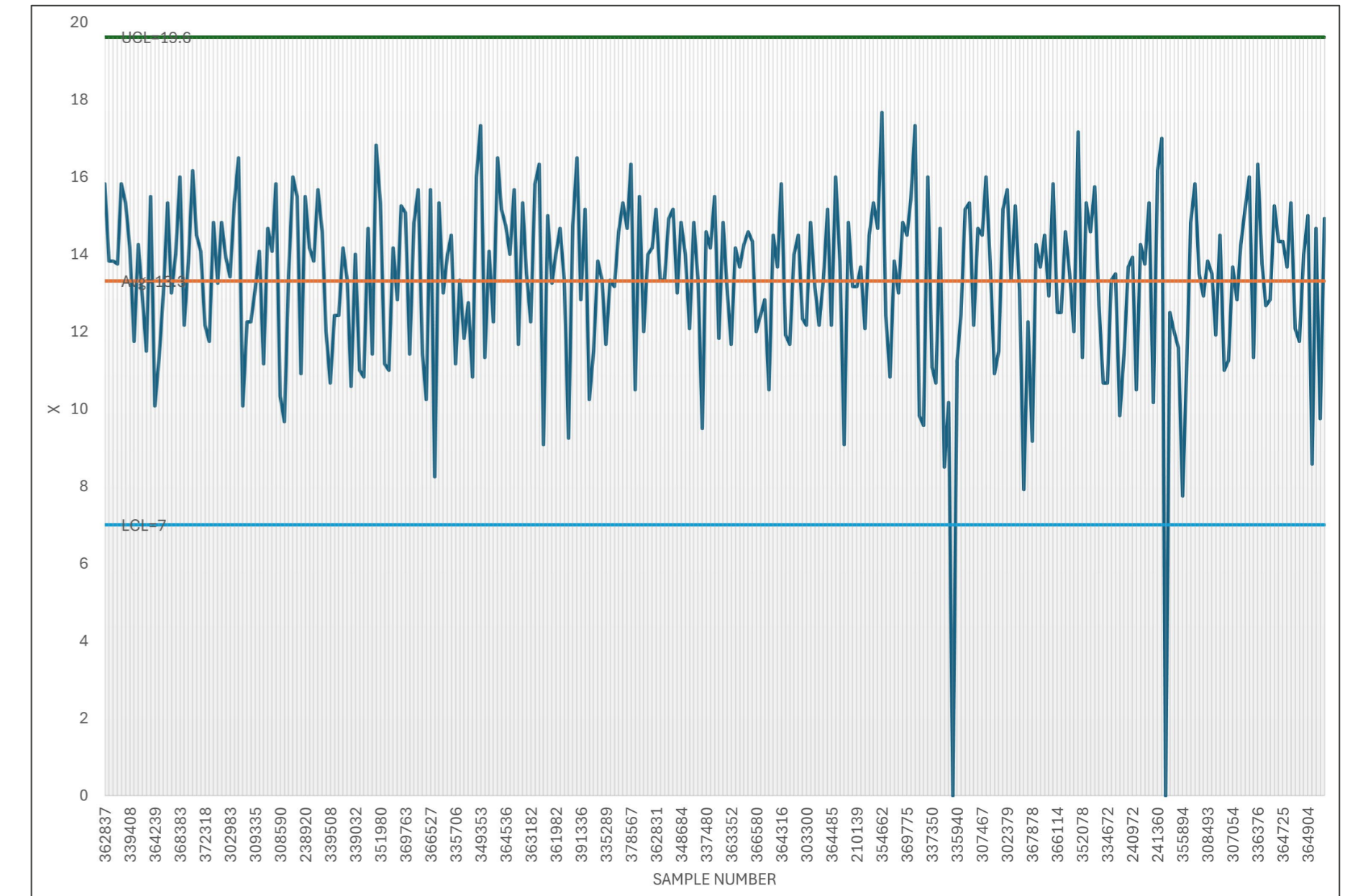
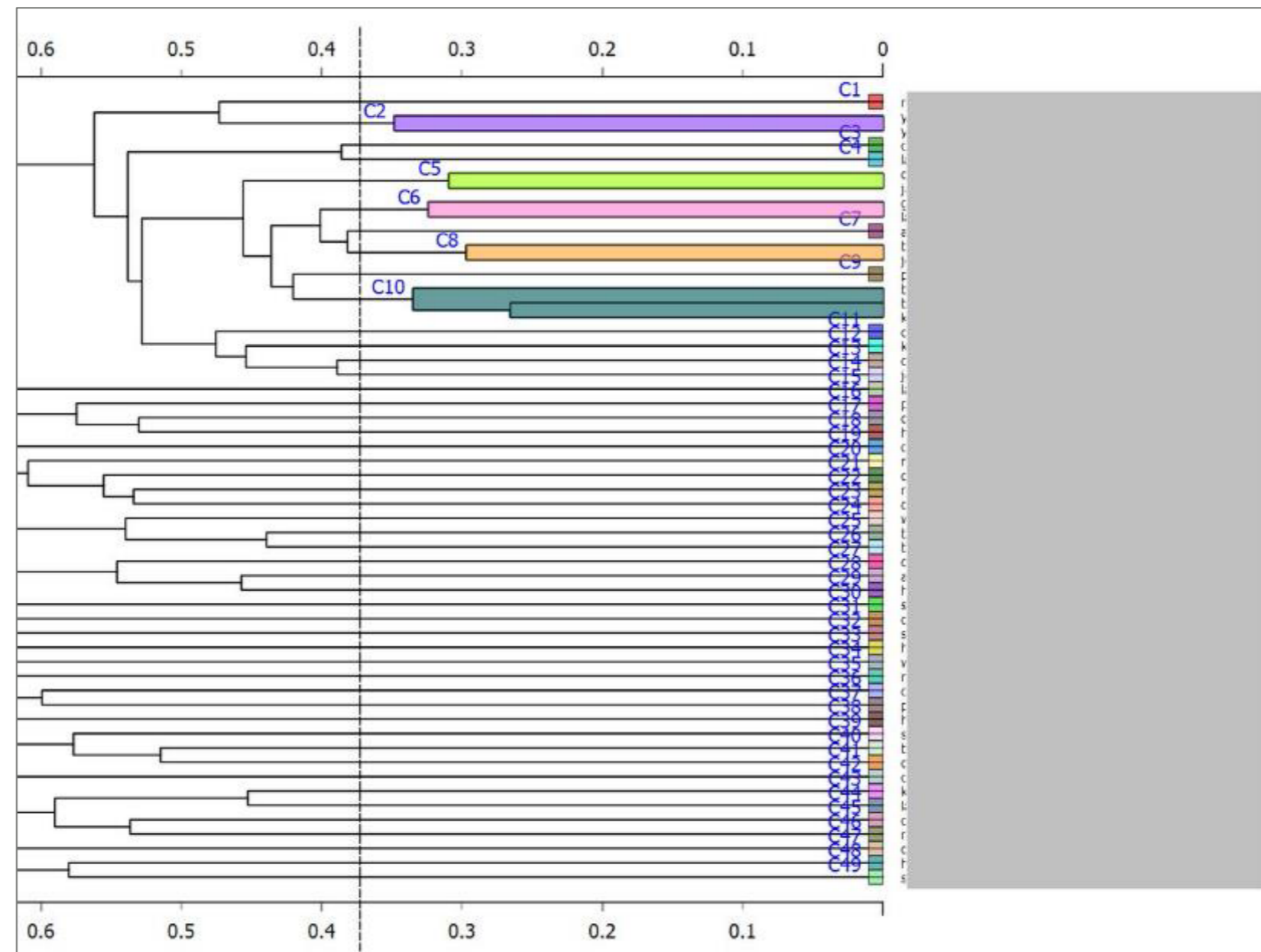


NEW COURSE DESIGN FEATURES

- Individual study (DISCUSSION FORUM)
Provide students with an open-ended question to explore using Gen AI and peer-reviewed literature resources and to provide a short answer public response to peers in the course.
- Assignment completion (INTEGRATION QUESTIONS)
The assessments are data-analysis oriented, and they now include well-defined integration questions that encourage reflection on existing work and using Gen AI to explore advanced linkages and connections.
- Group work (Currently prohibit this aspect)
Situations had arisen where students claim it is difficult to present individual ideas differently after a group session and so it is difficult to discern honest answers from copied ones.
- Exam preparation (QUIZZES)
Over 40 quiz questions were developed and provided to students for practice. They can use Gen AI to generate more questions based on the structure of the available questions.

Managing Academic Integrity at Scale

Managing academic integrity

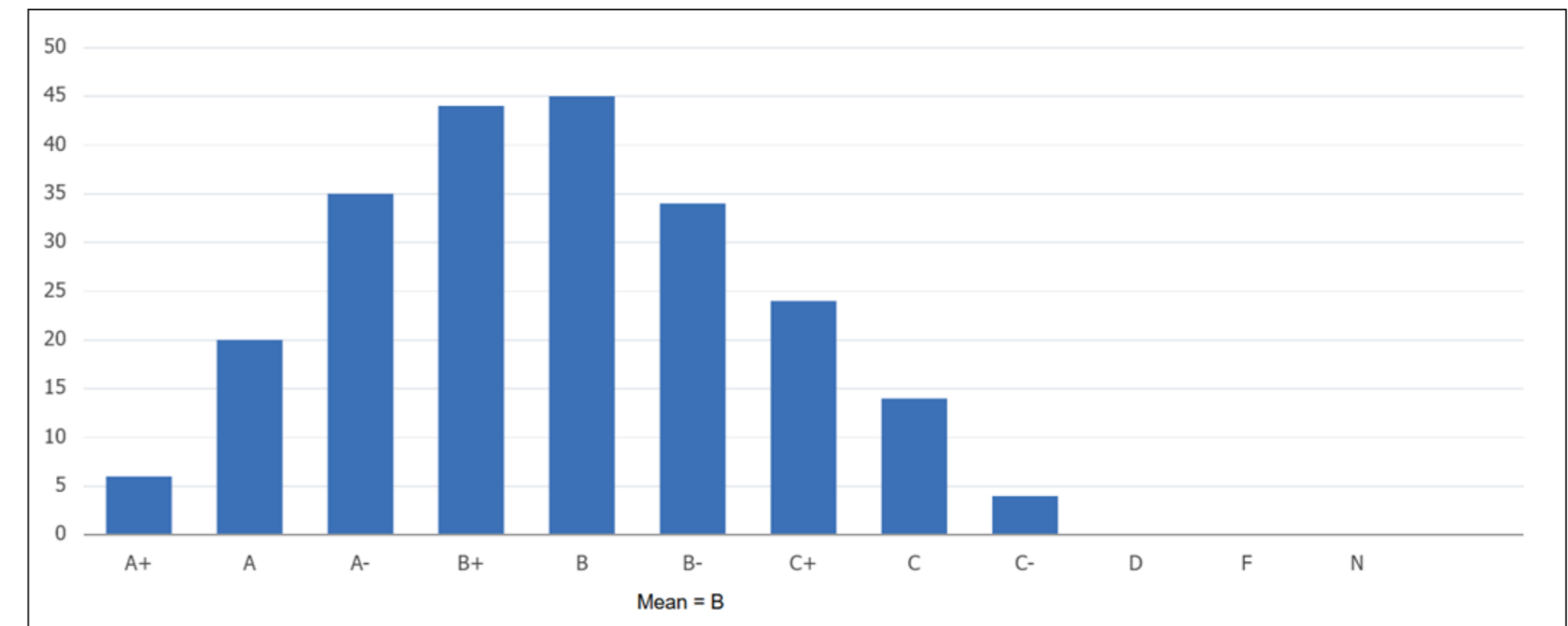
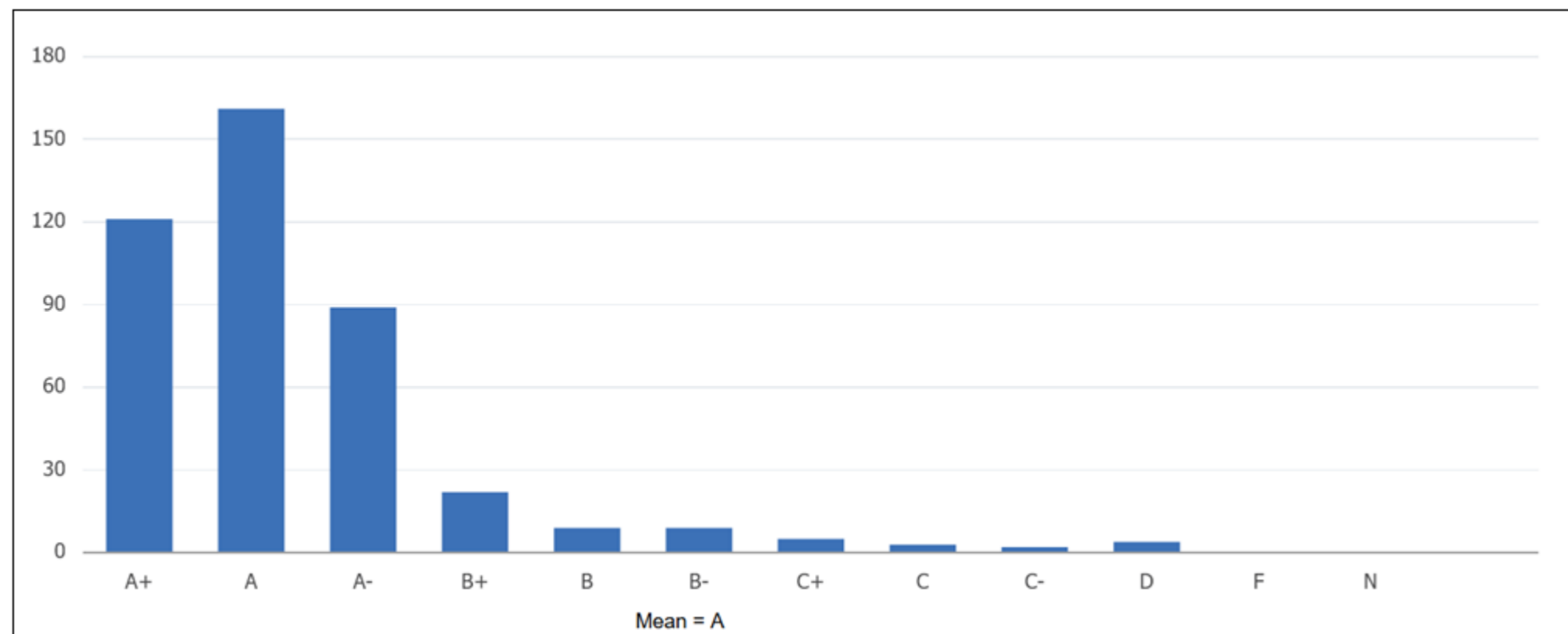


Ethical Issue:
Transparency, fairness, privacy, responsibility

Conclusion

Towards a sense of stability and normalcy and work/life balance

- ❑ Enhance self-learning through educational technologies (Gen AI)
- ❑ Enhance engagement and critical thinking through educational technologies (Gen AI)
- ❑ Develop a culture of responsible and ethical use of Artificial Intelligence



THANK YOU

