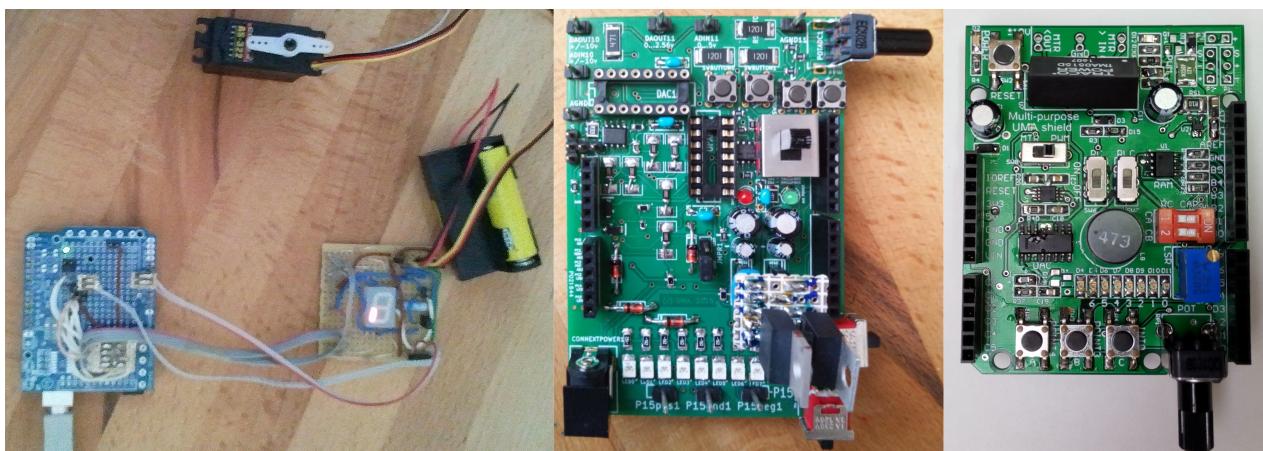


UMA MULTIPURPOSE SHIELD

Andres Gongora, Juan-Antonio Fernández-Madrigal, Ana Cruz-Martín, Vicente Arevalo, Cipriano Galindo, Carlos Sánchez-Garrido, Javier Monroy, Javier Fernández-Cañete.

Dpto. de Ingeniería de Sistemas y Automática, Universidad de Málaga

We have developed UMA Multipurpose Shield, an Arduino shield to be used in several Engineering Degrees at Málaga University (conference paper in Spanish is available in open access at: <https://zenodo.org/record/894106#.WcpoKxdx30>)



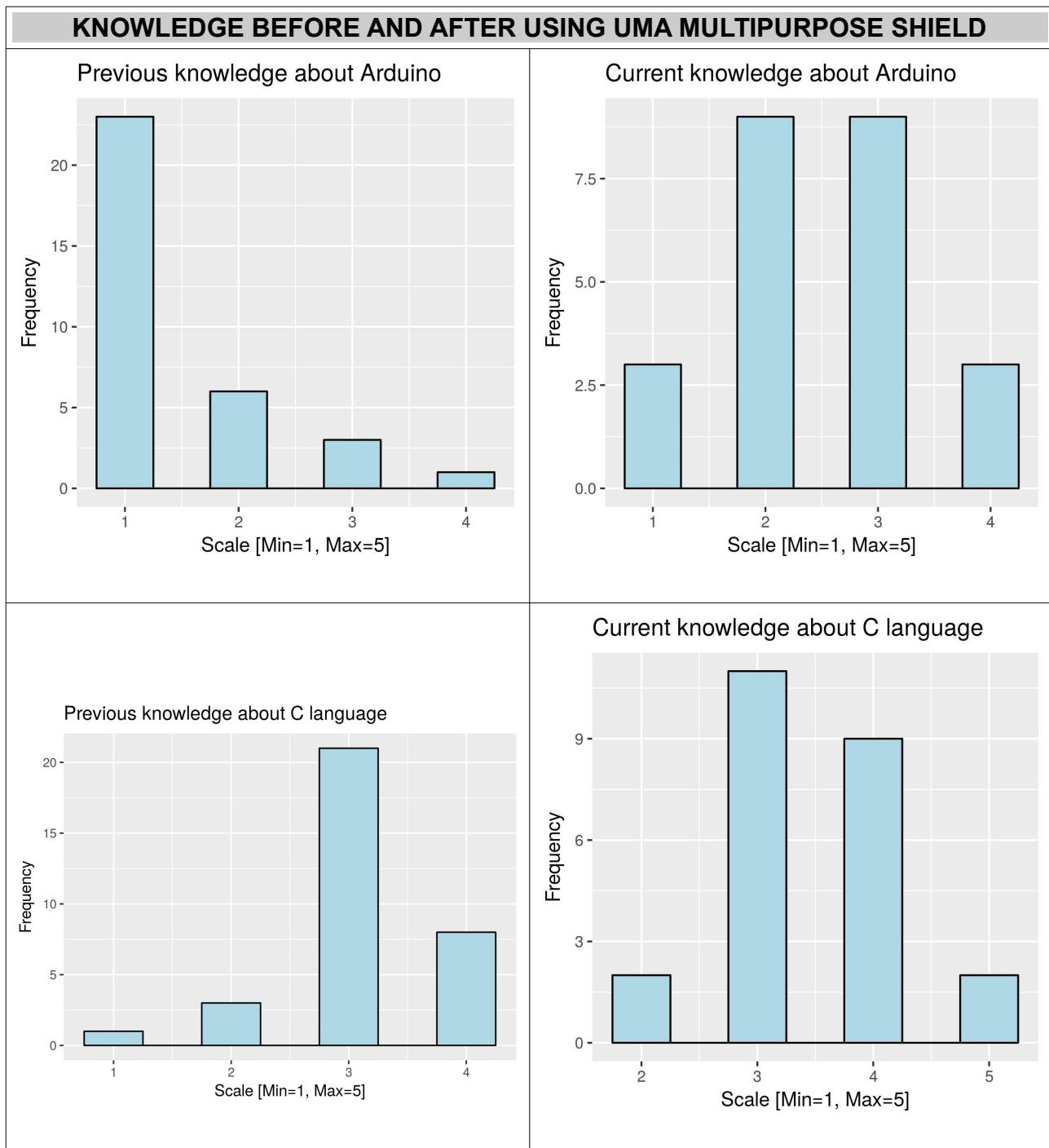
In this preliminary report, we show the results gathered in several courses via a pre- activity and post-activity surveys answered by the students.

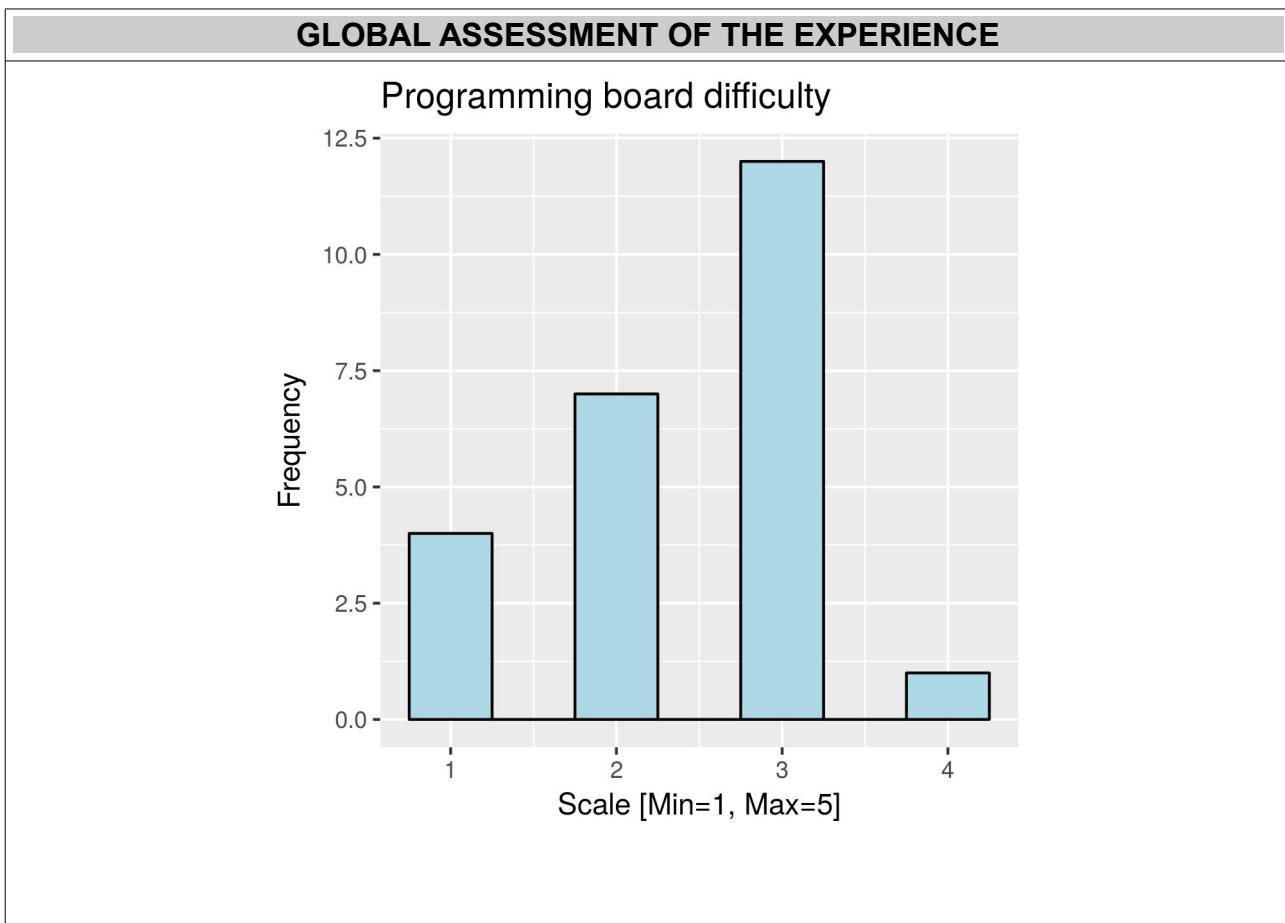
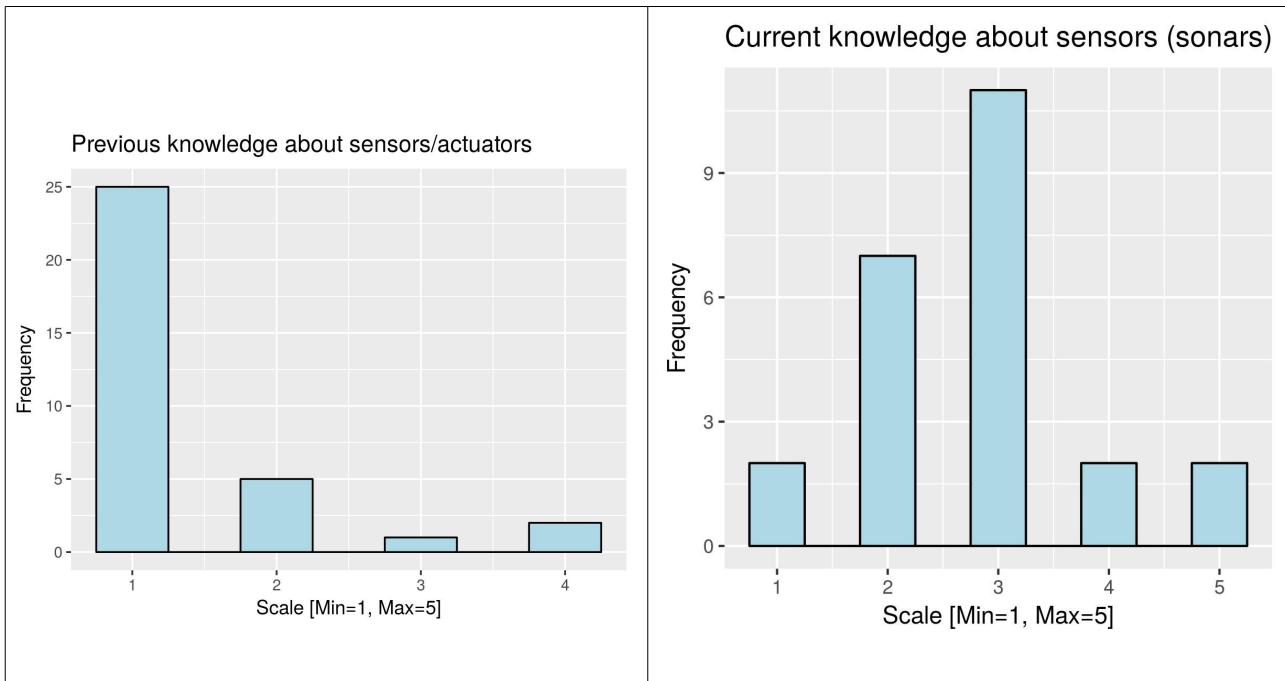
The results show that the use of Arduino (academic year 2015-2016) and our shield (academic year 2016-2017) improve the knowledge of our students in aspects related to Arduino, C programming language, and the use of sensors and actuators. Furthermore, they report to be very satisfied with the quality of the provided teaching materials, the attention of the teacher in lab hours, and the global experience.

This work was funded by the Teaching Innovation Project PIE15-093 of Málaga University.

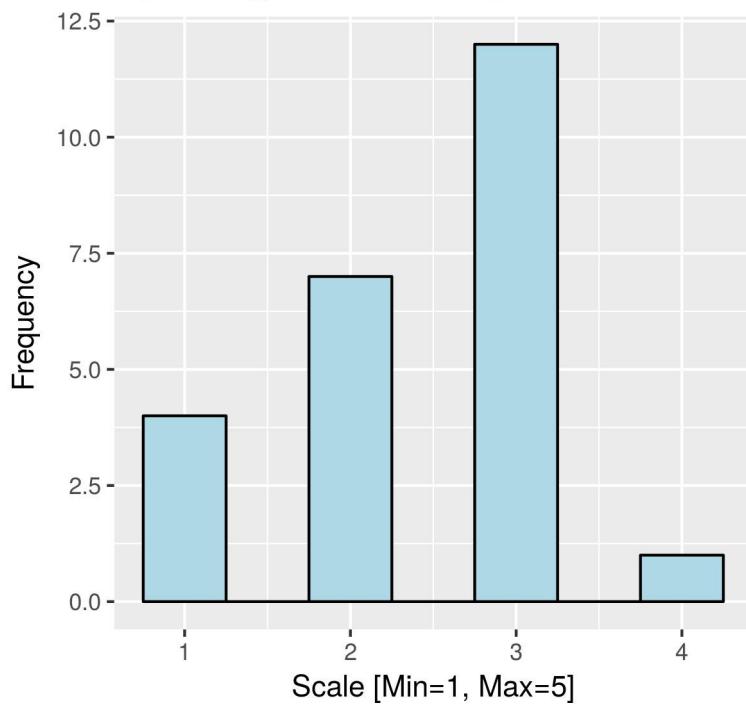
Academic Year (2015 – 2016)

Course: Robot Programming (2015-2016)

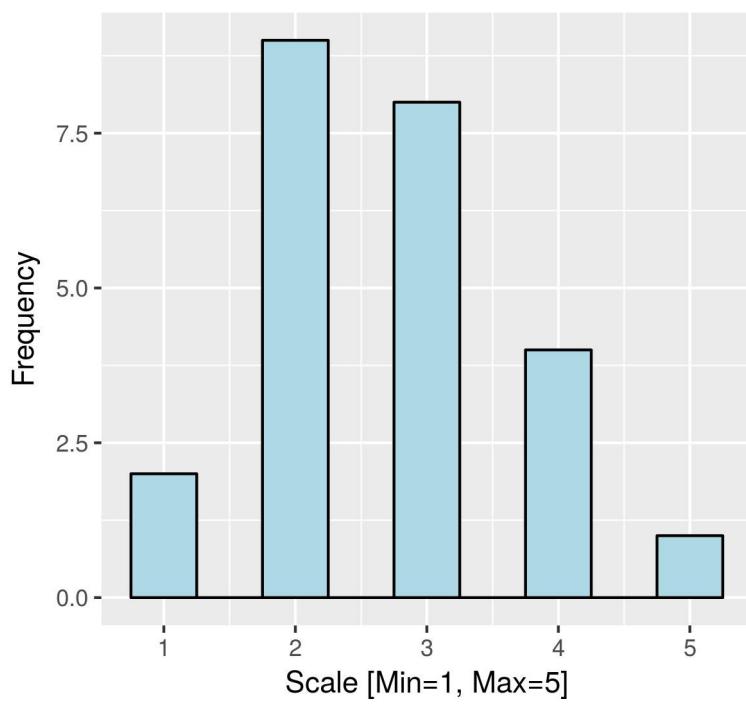




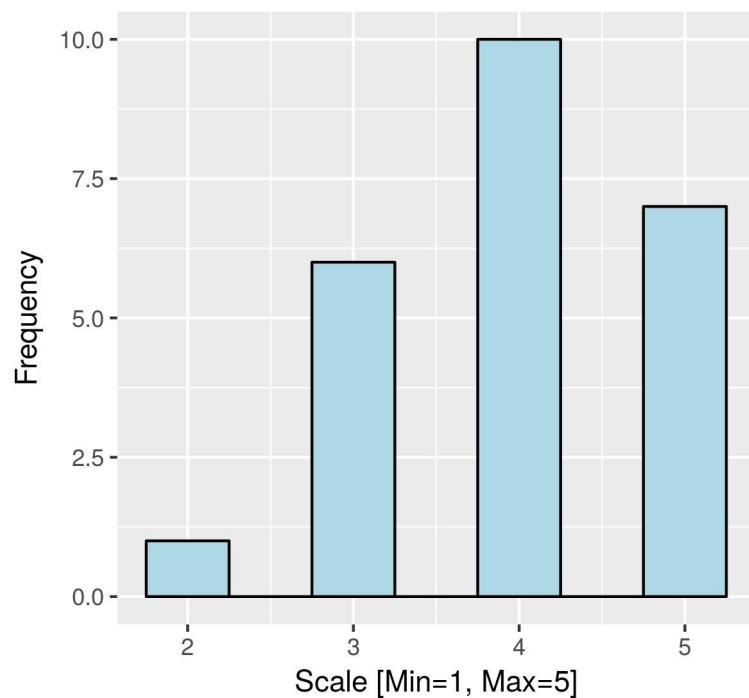
Operating board difficulty



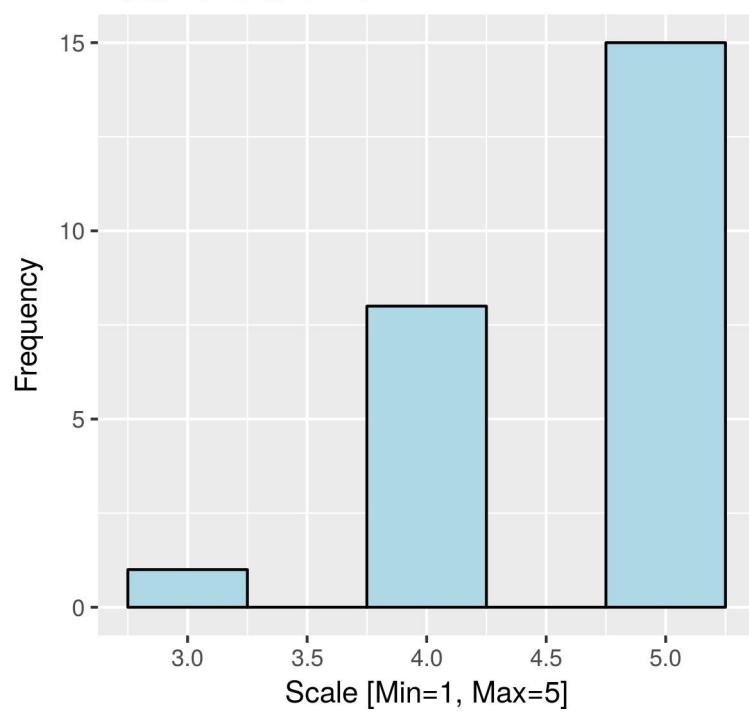
Lab practices difficulty



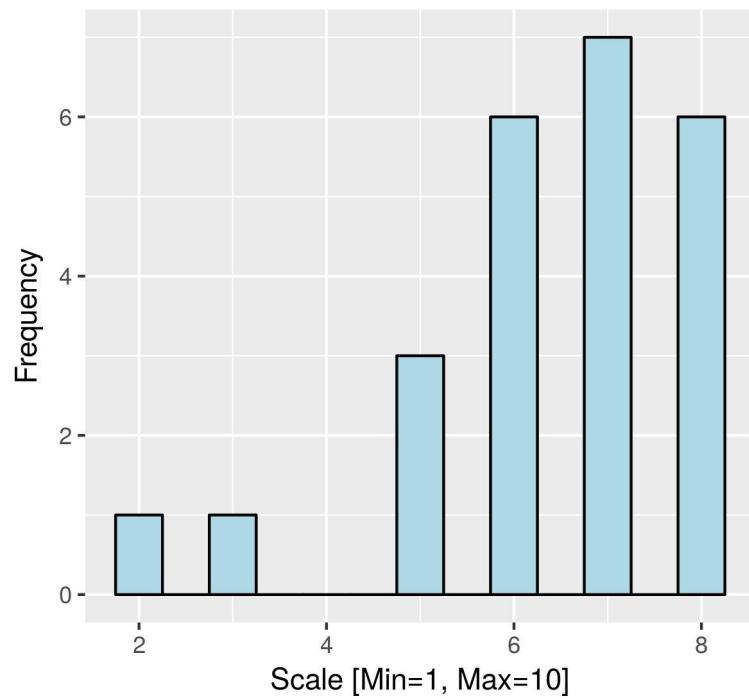
Quality of provided lab material

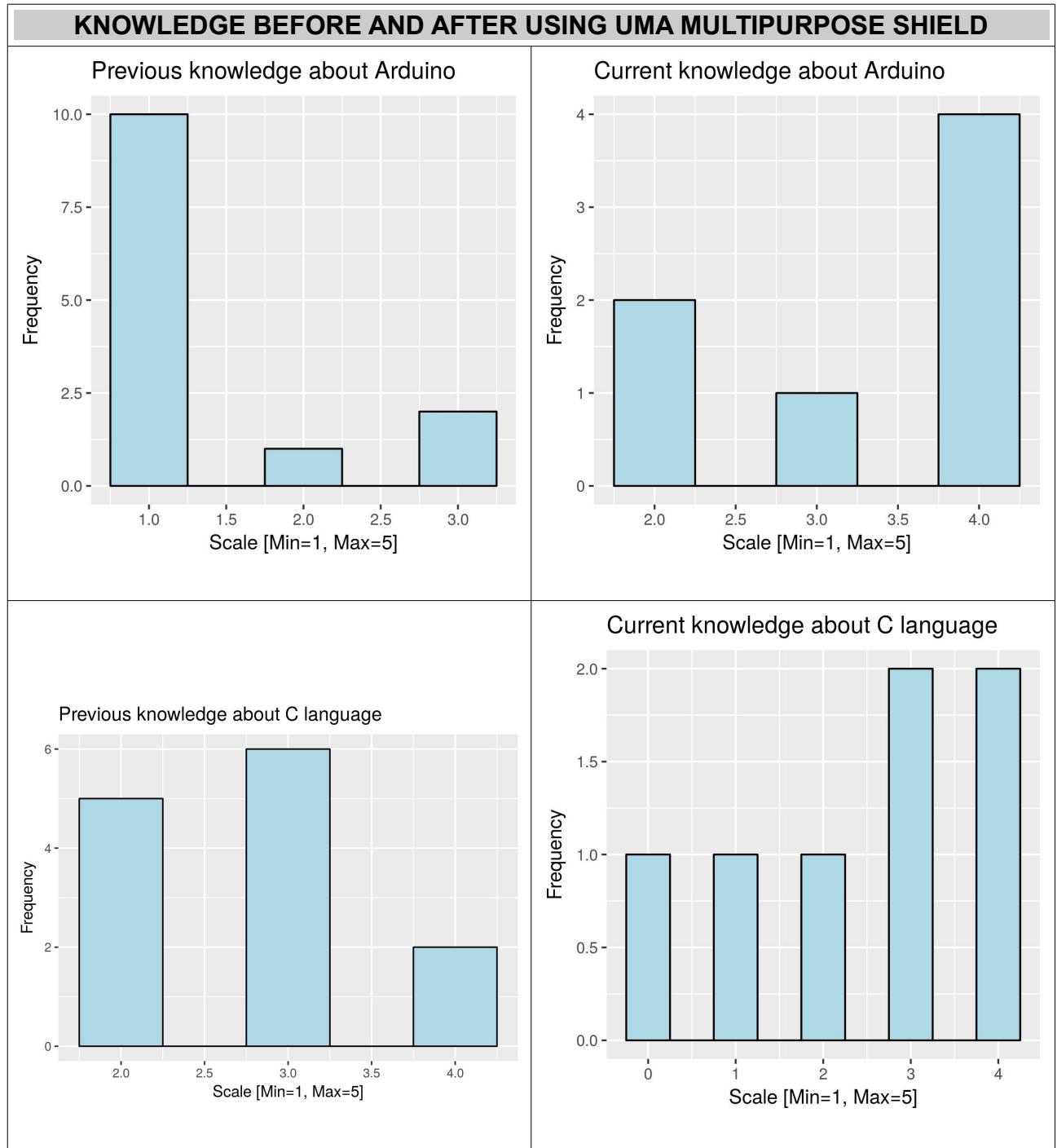


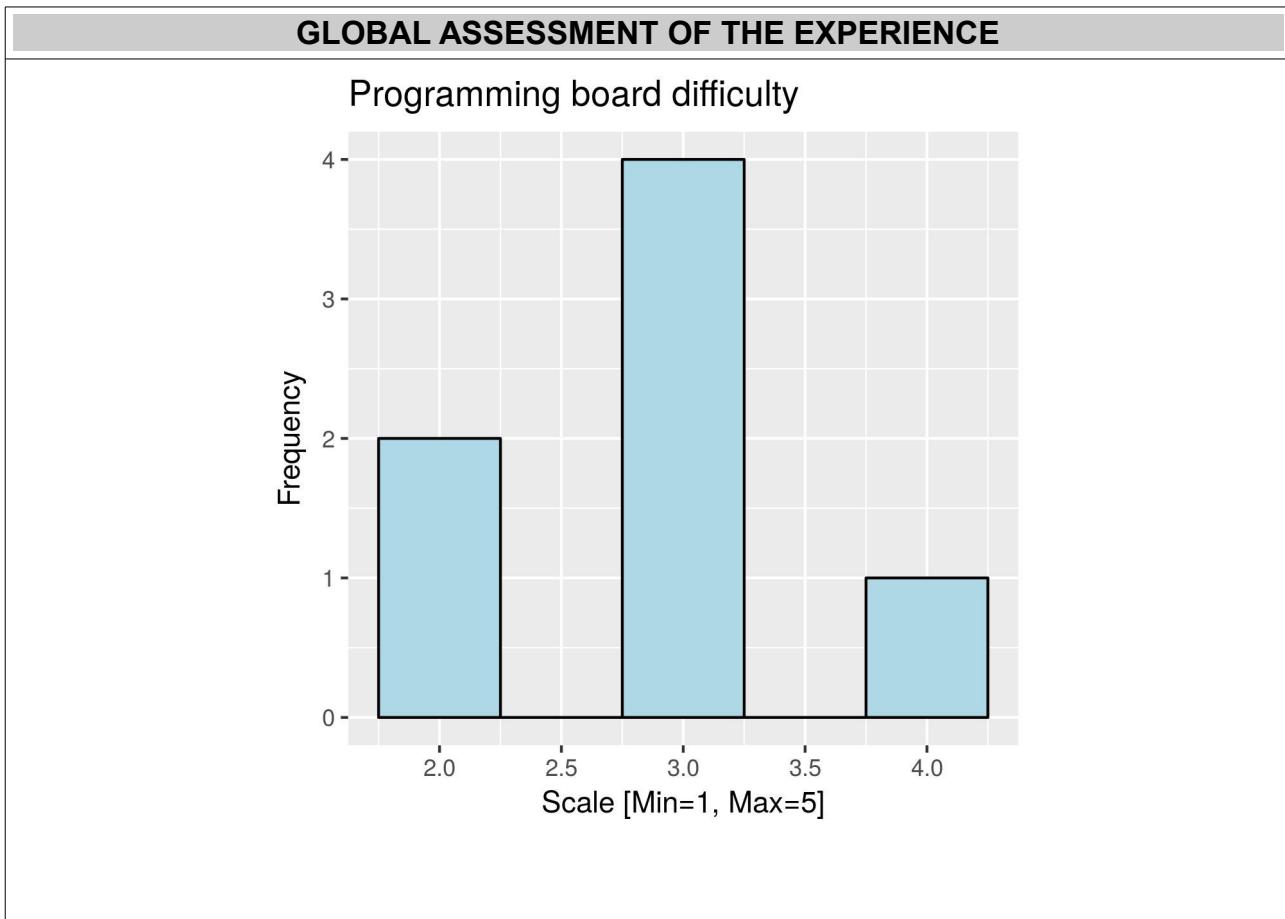
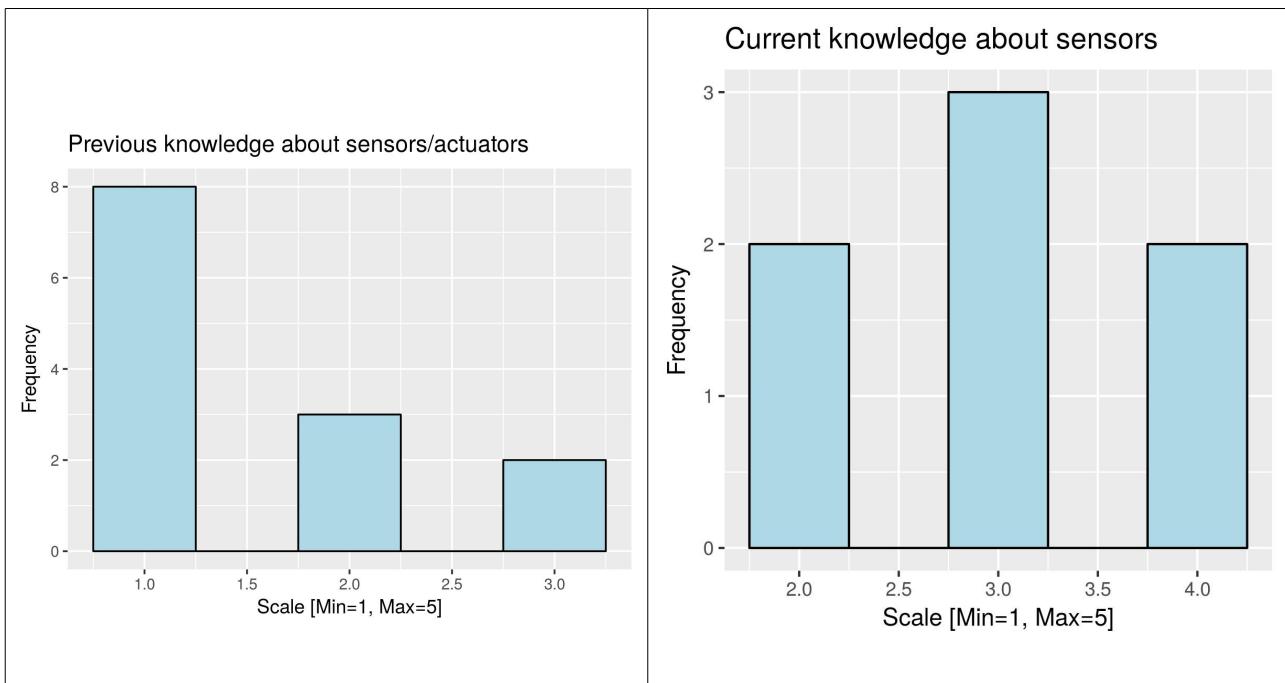
Teacher's attention



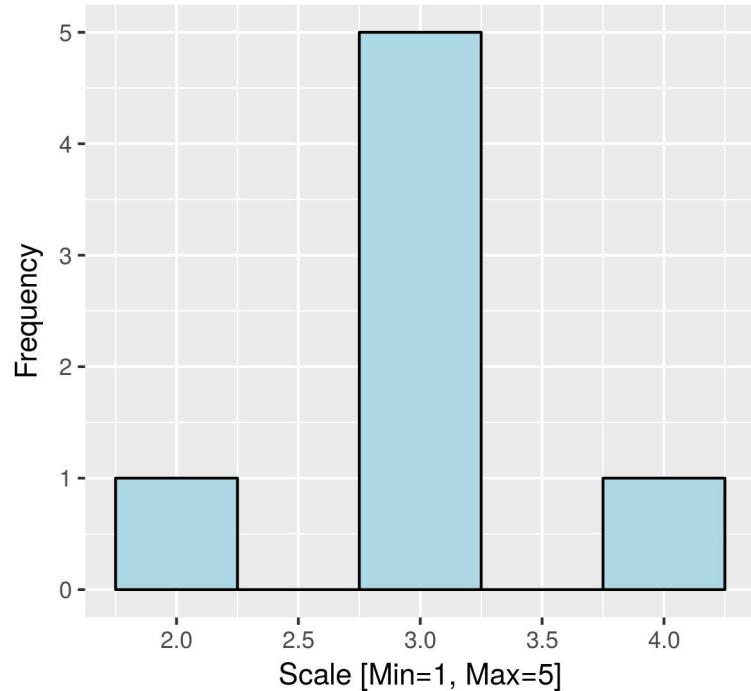
Global experience



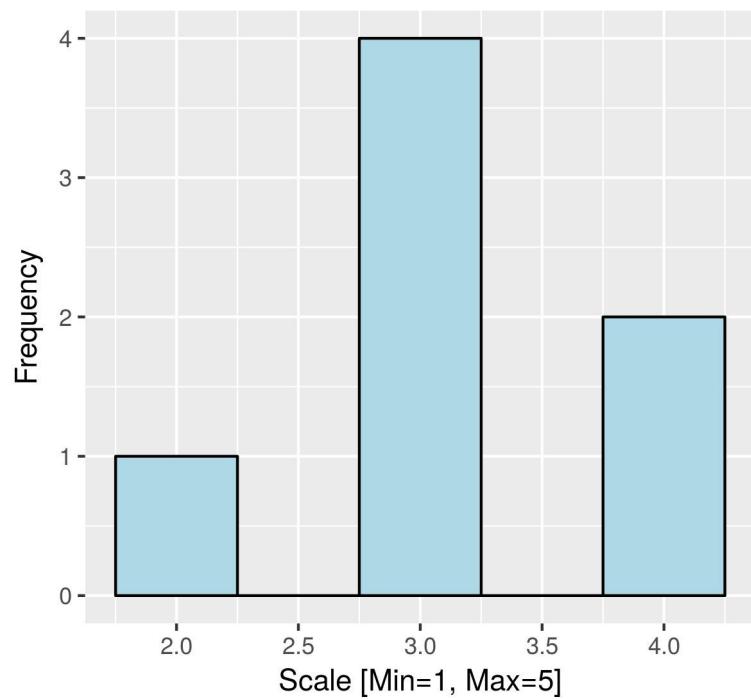




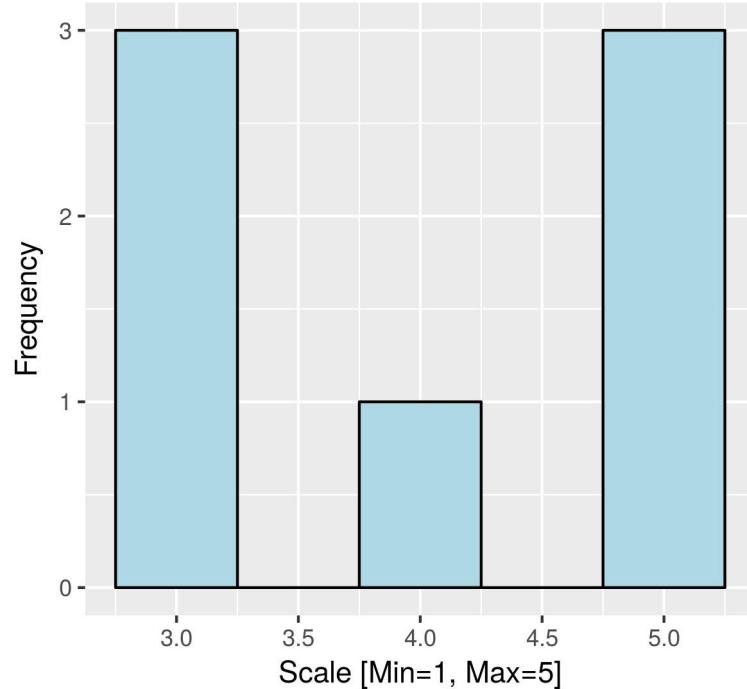
Operating board difficulty



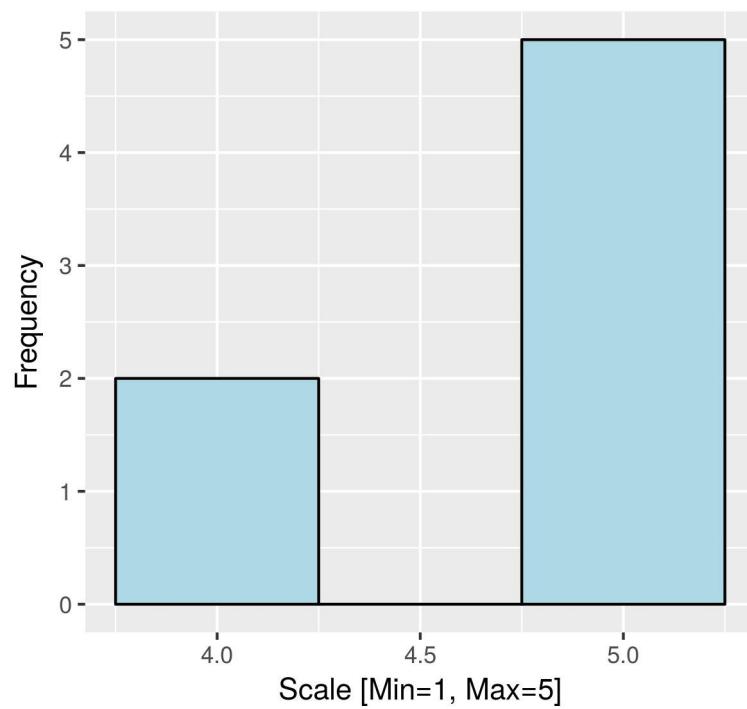
Lab practices difficulty

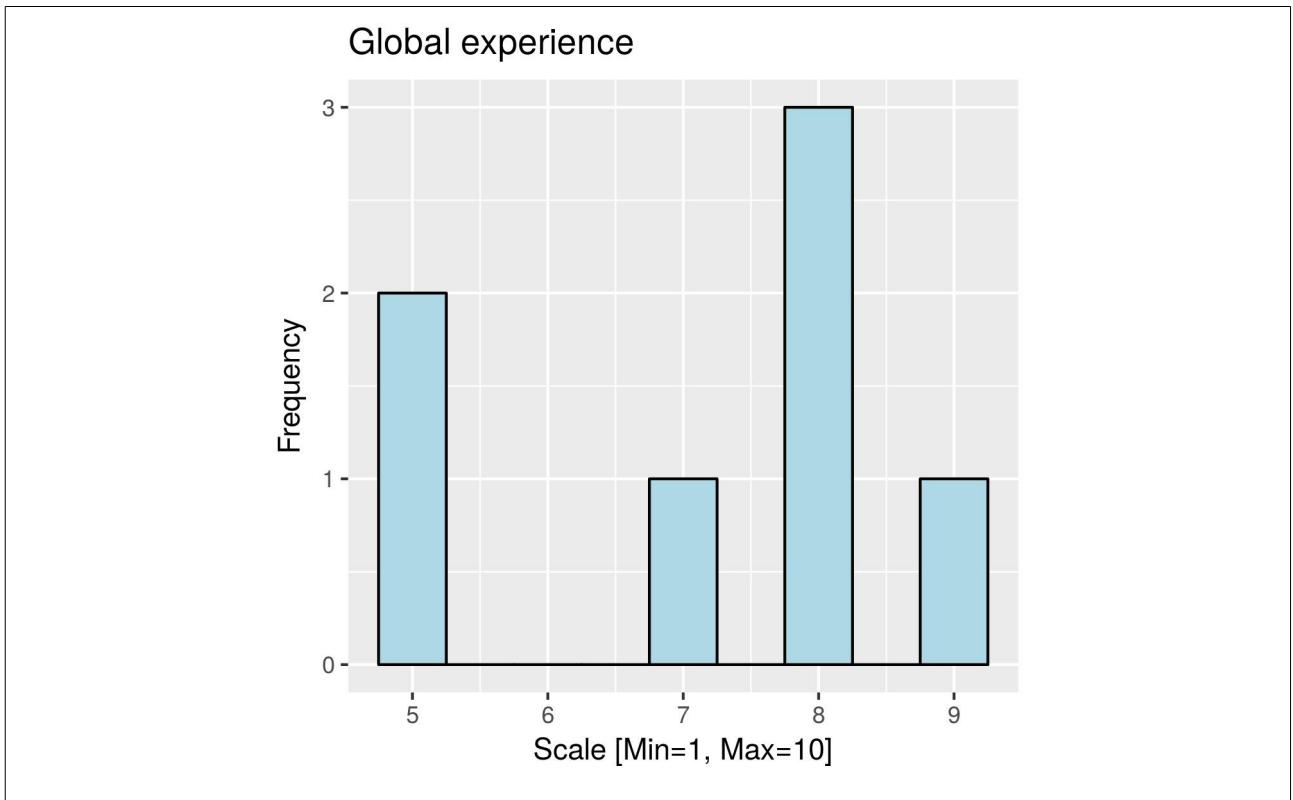


Quality of provided lab material

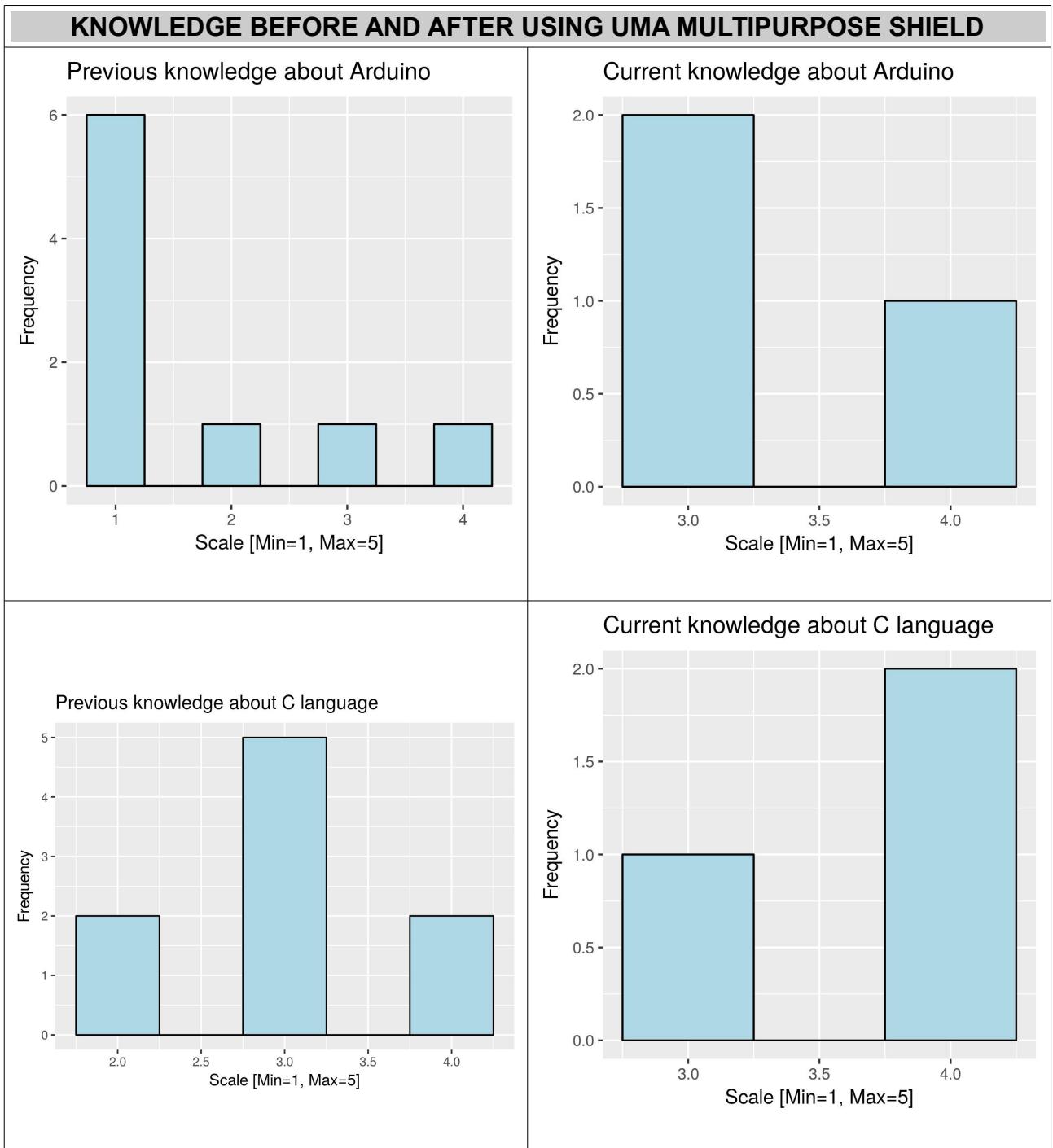


Teacher's attention



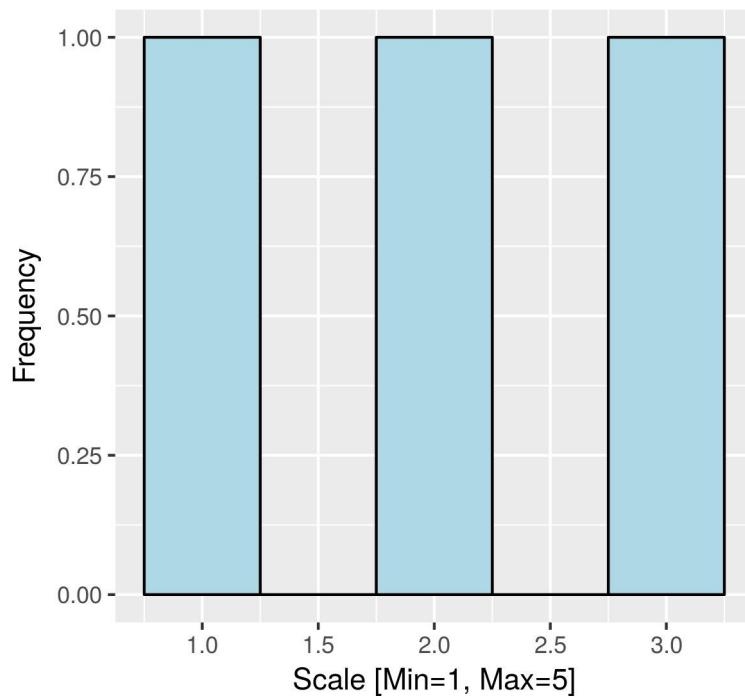


Course: Real Time Systems (2015-2016)

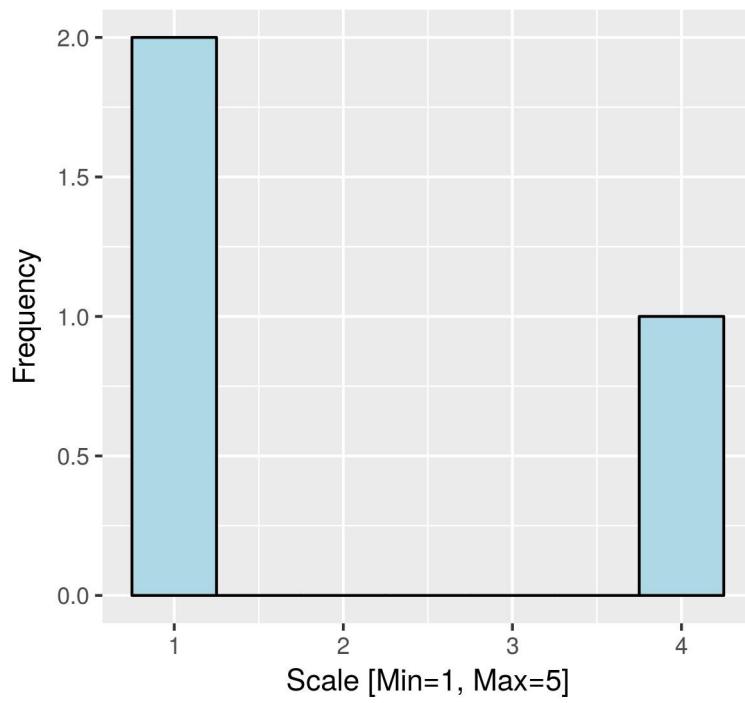


GLOBAL ASSESSMENT OF THE EXPERIENCE

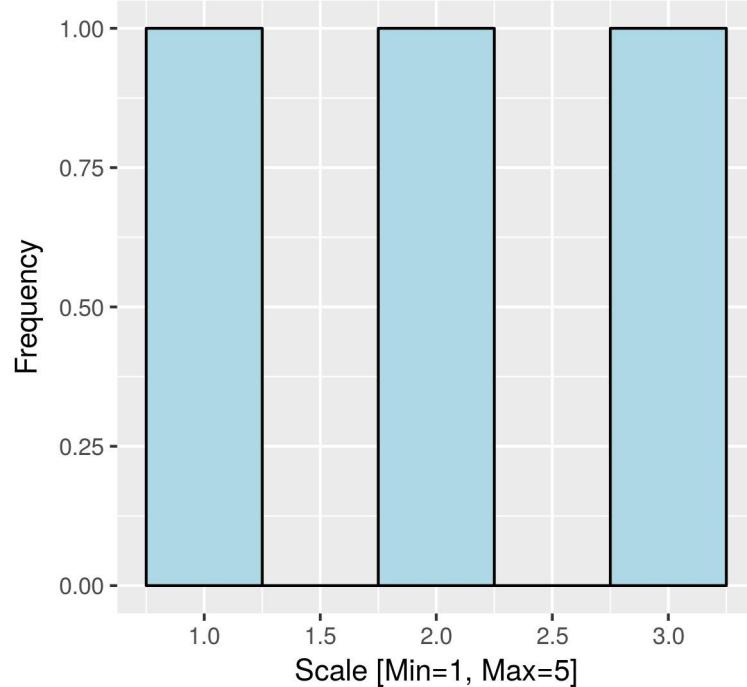
Programming board difficulty



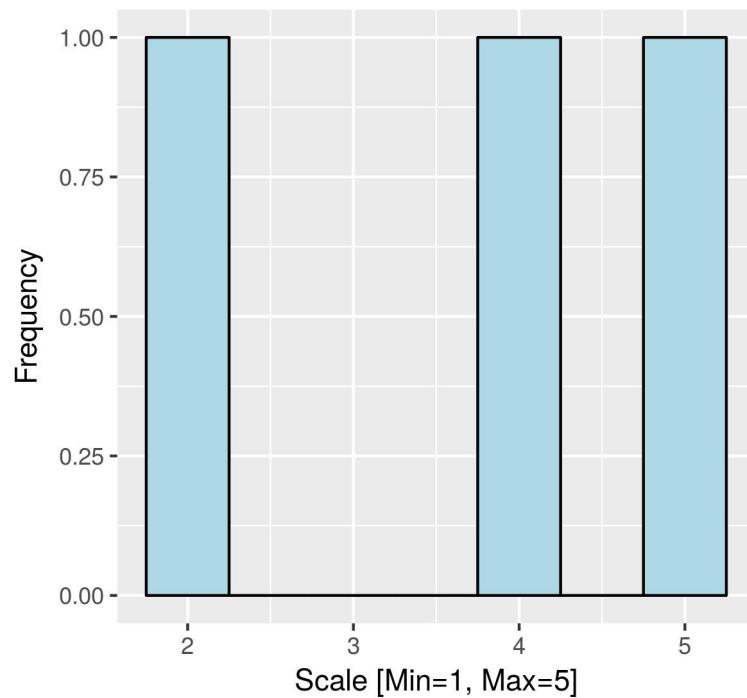
Operating board difficulty



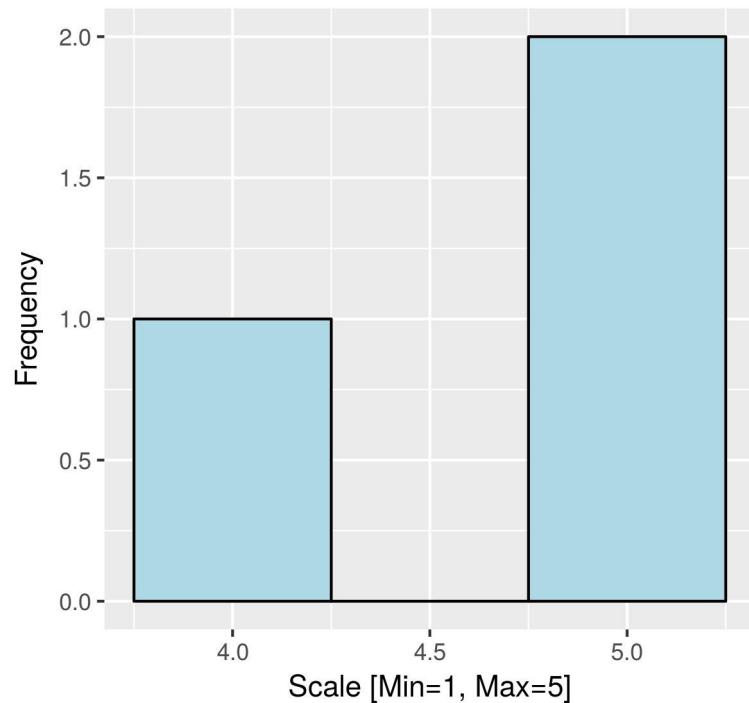
Lab practices difficulty



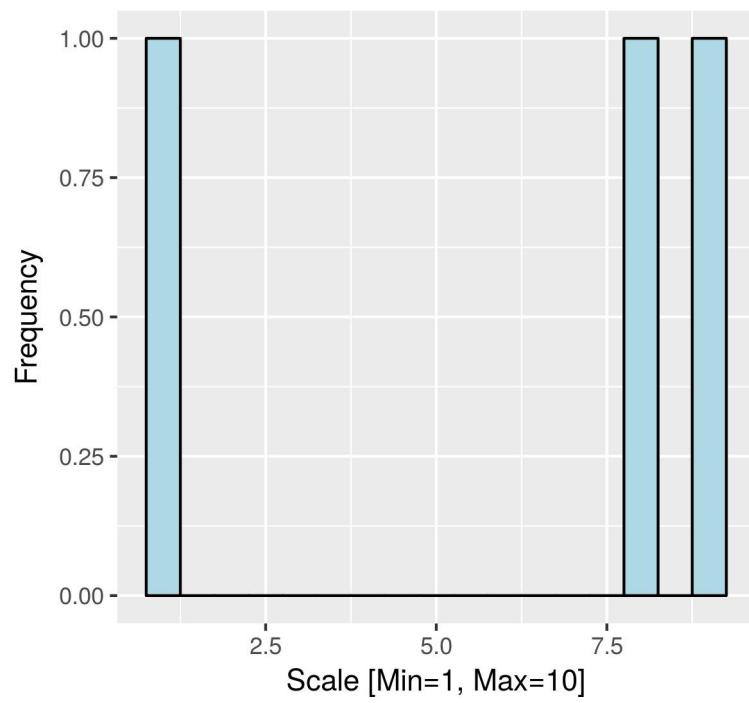
Quality of provided lab material



Teacher's attention

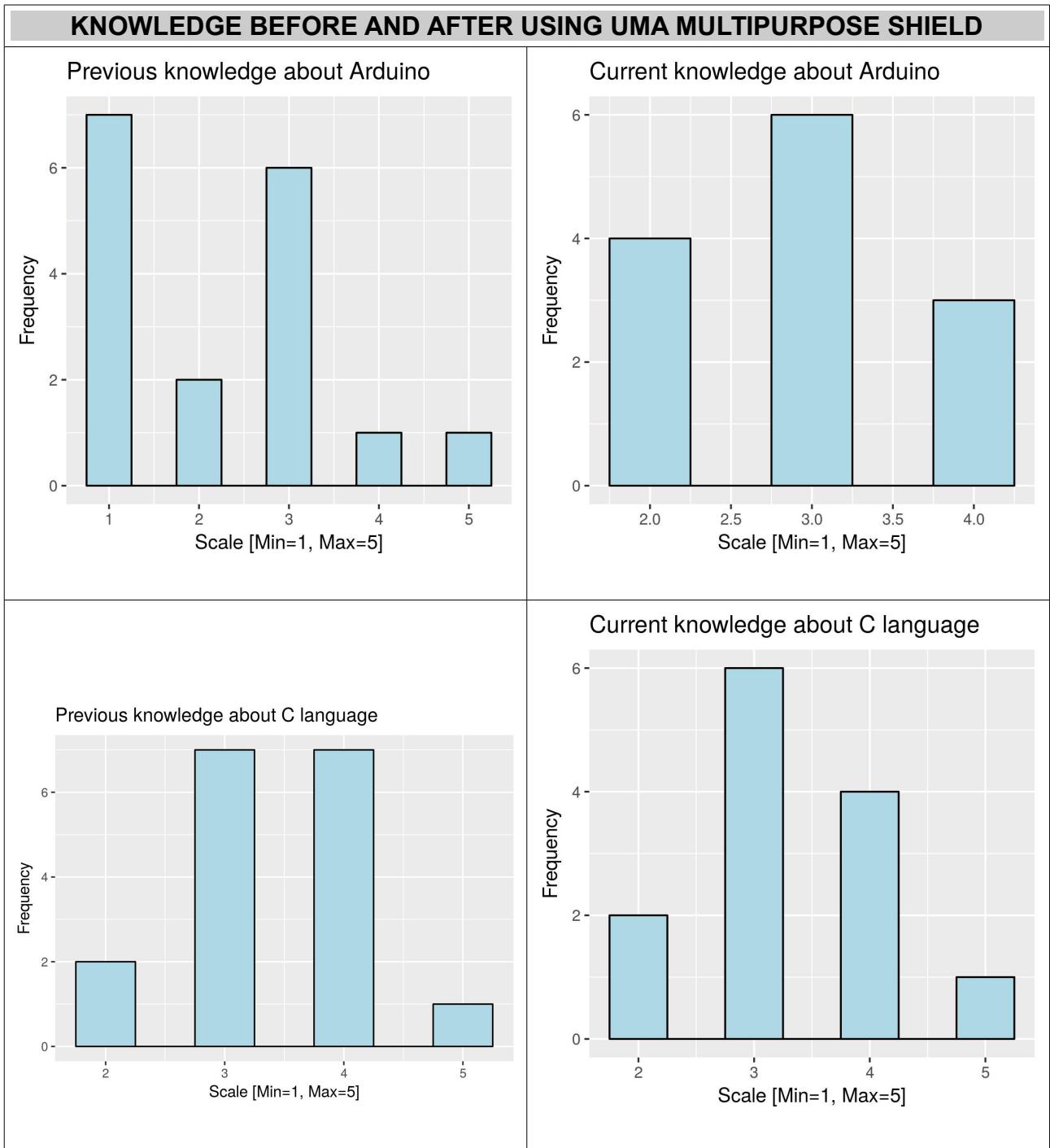


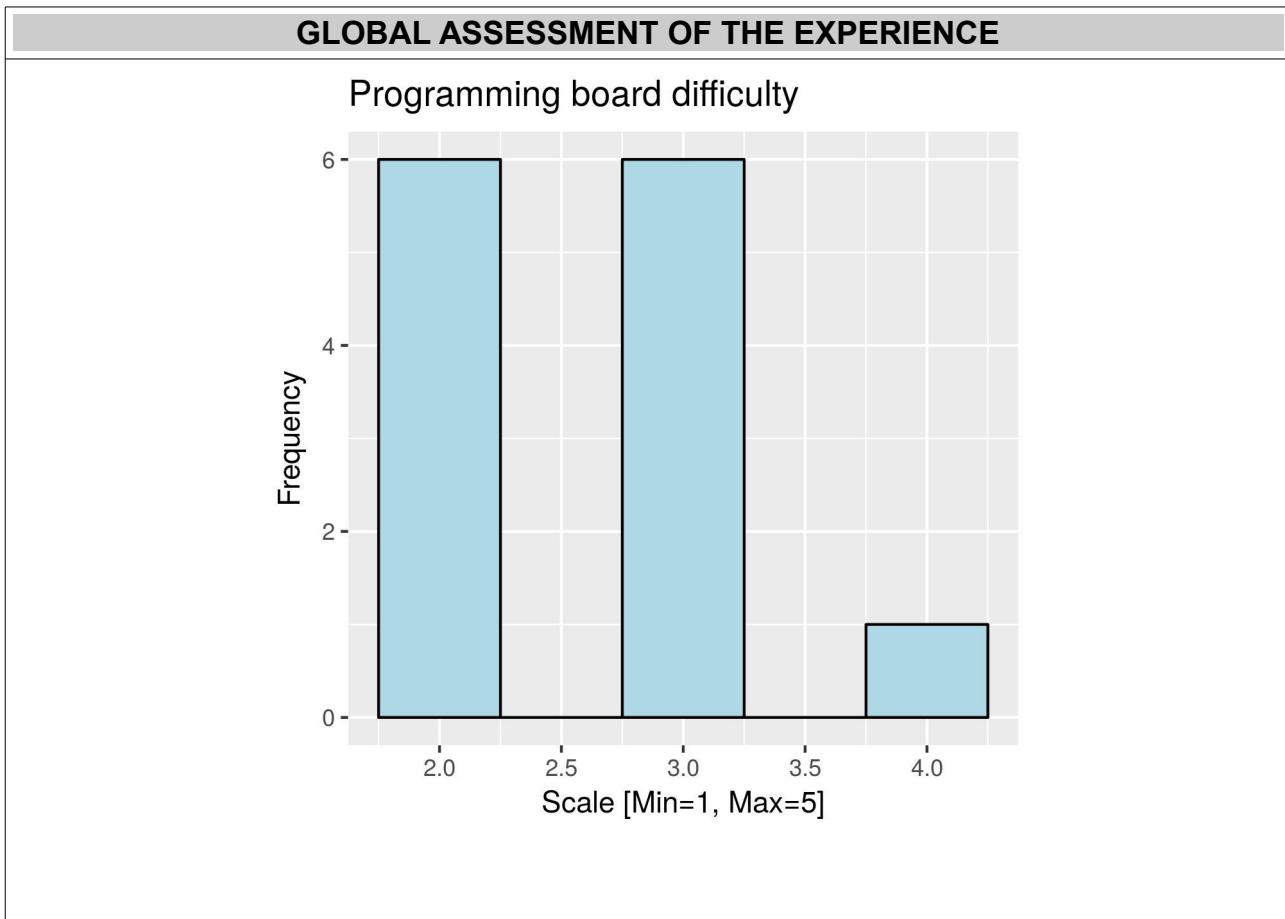
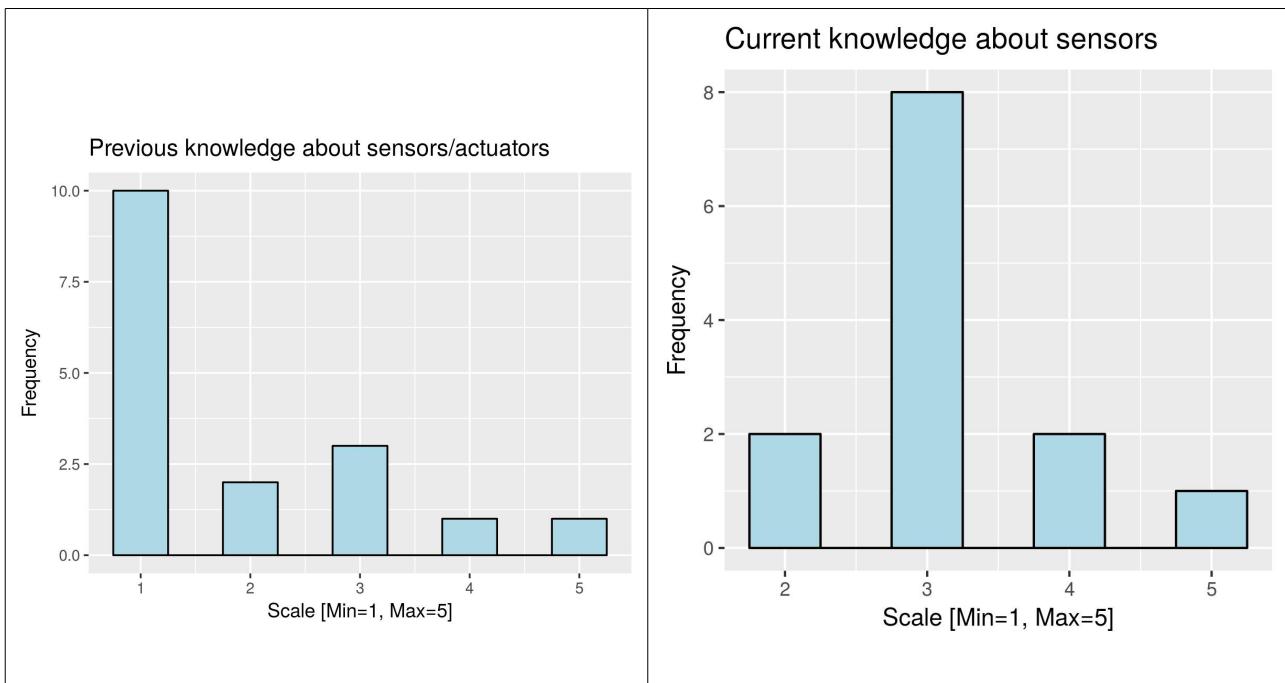
Global experience



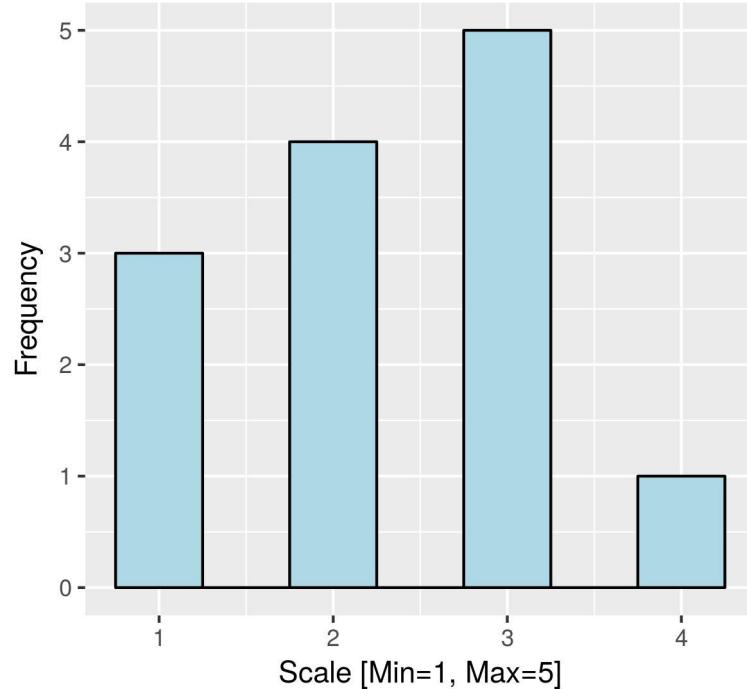
Academic Year (2016 – 2017)

Course: Robot Programming (2016-2017)

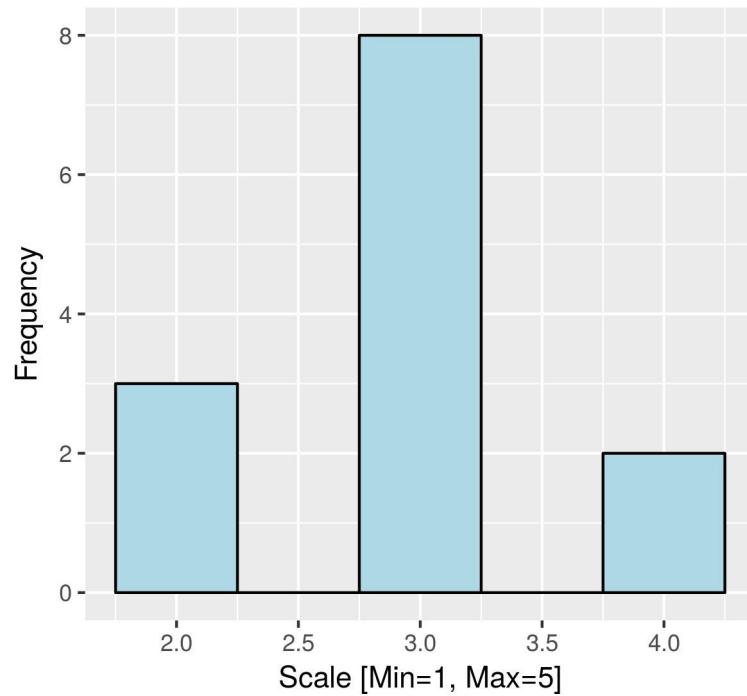




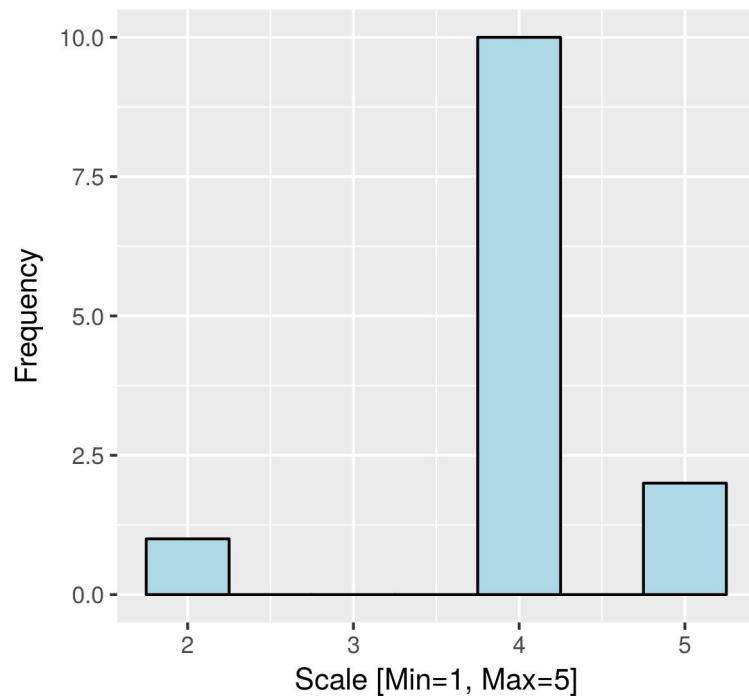
Operating board difficulty



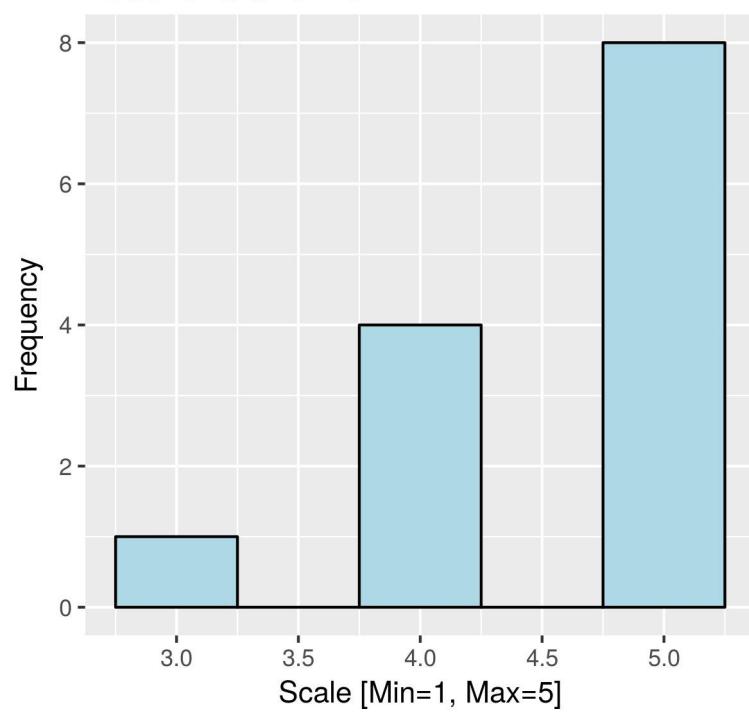
Lab practices difficulty



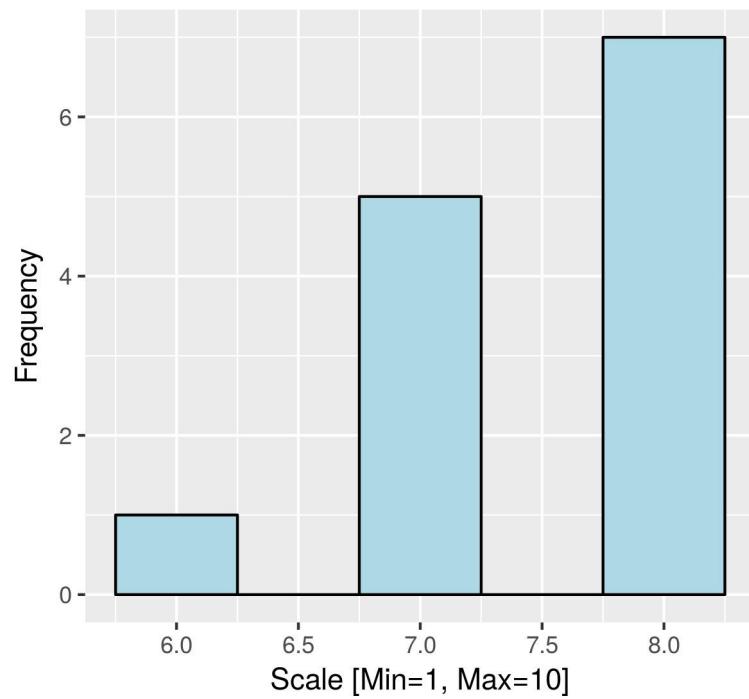
Quality of provided lab material



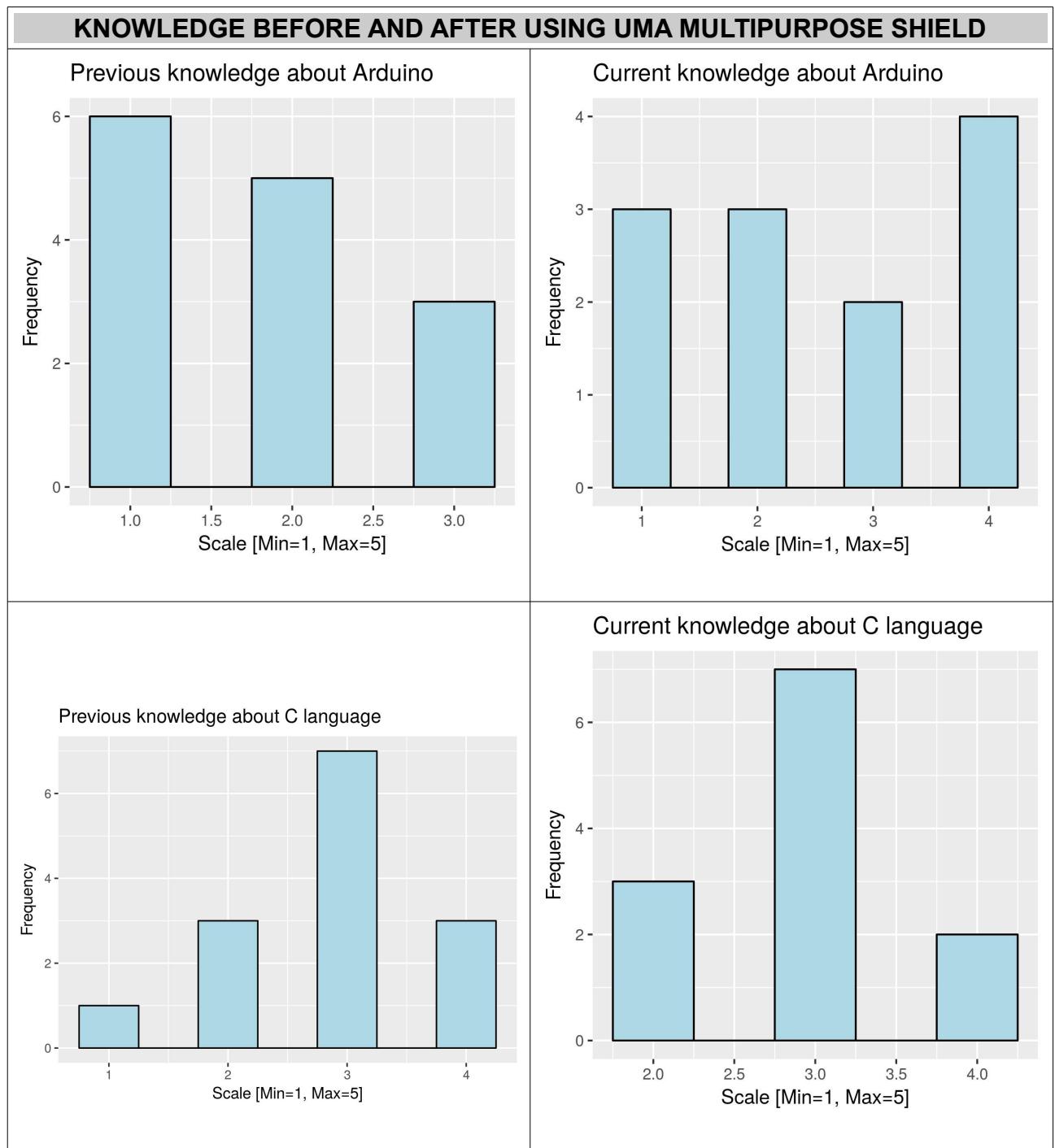
Teacher's attention

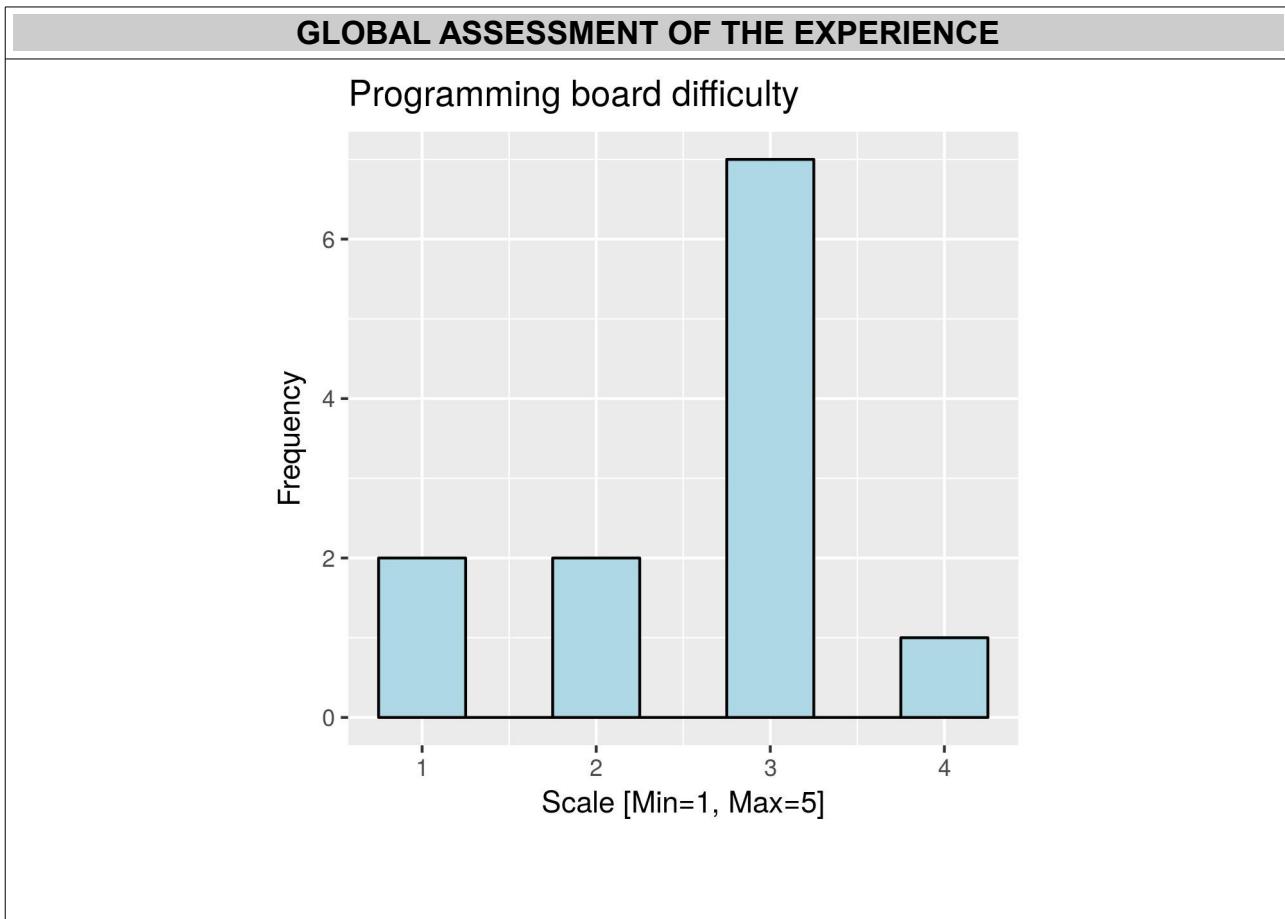
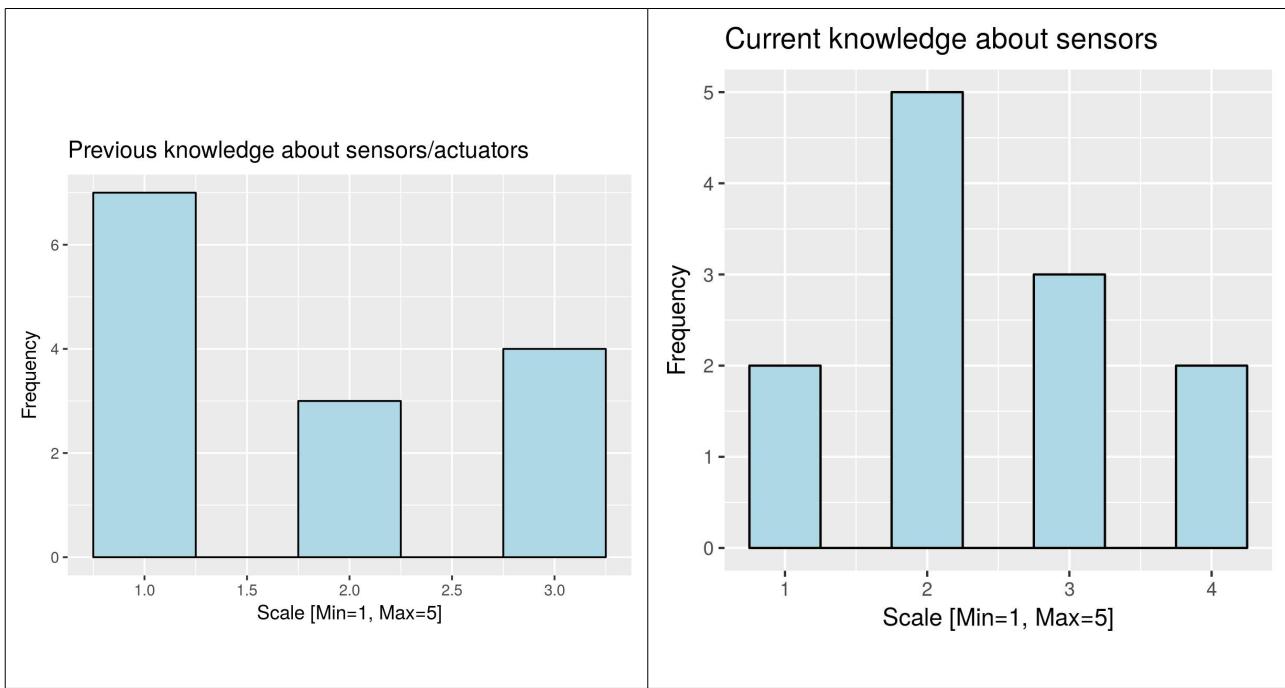


Global experience

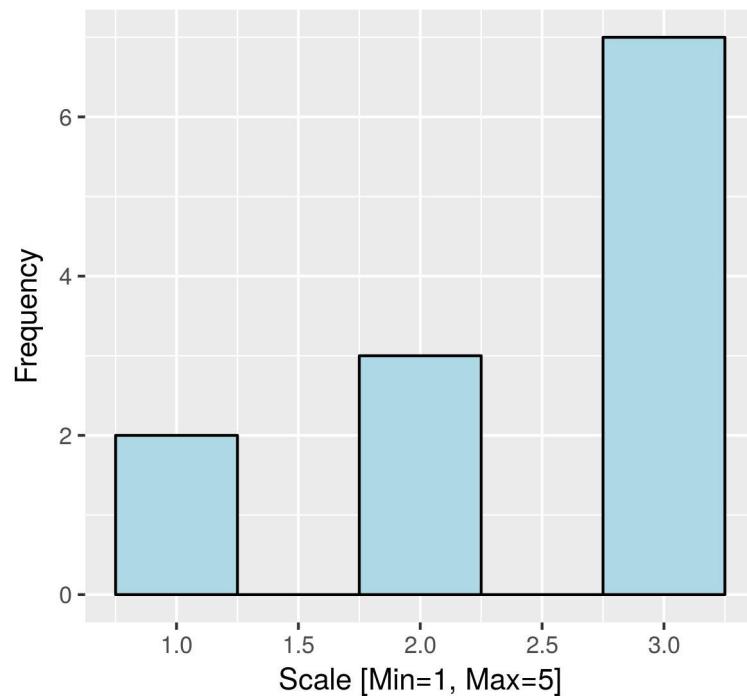


Course: Industry Information Systems (2016-2017)

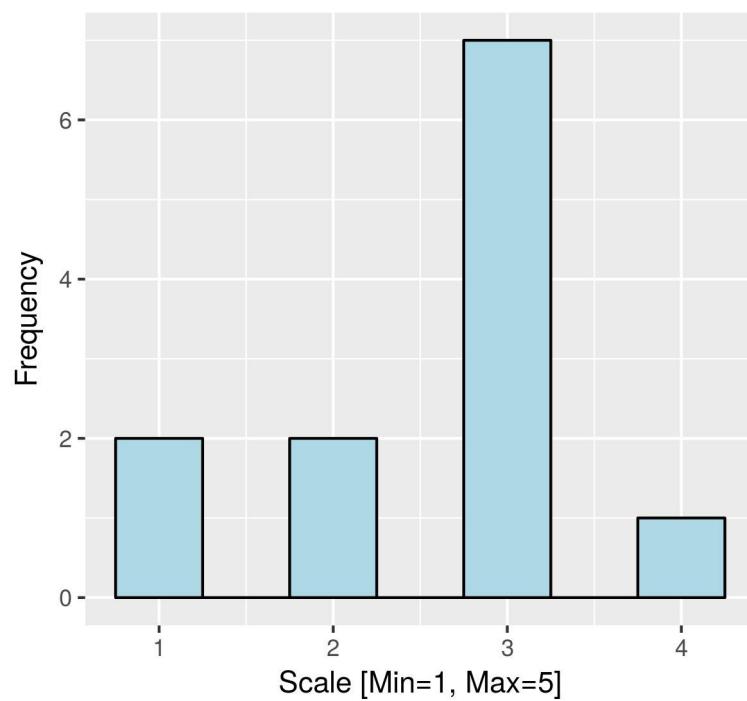




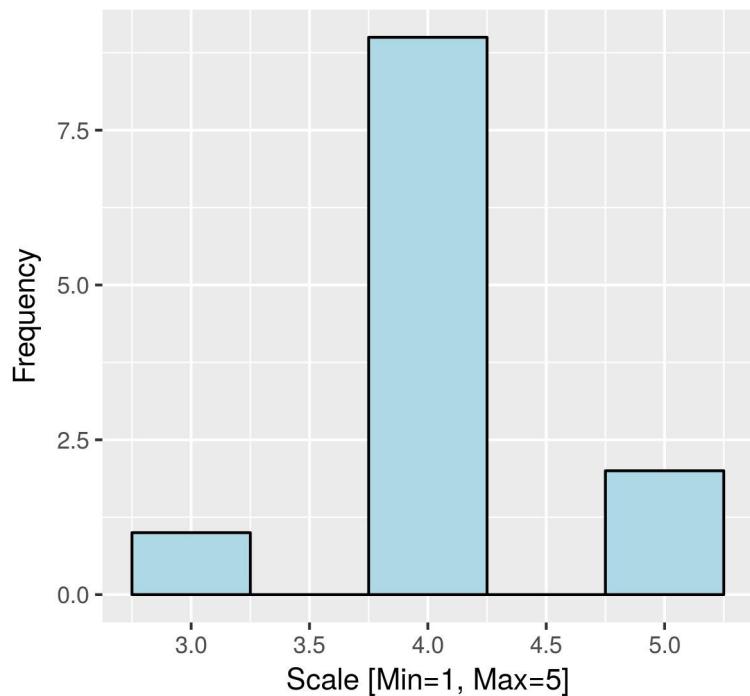
Operating board difficulty



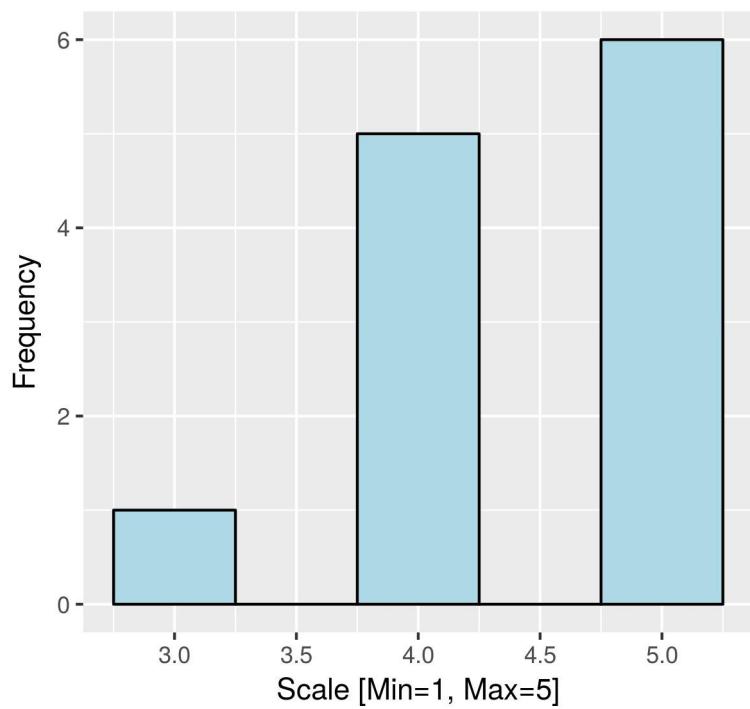
Lab practices difficulty

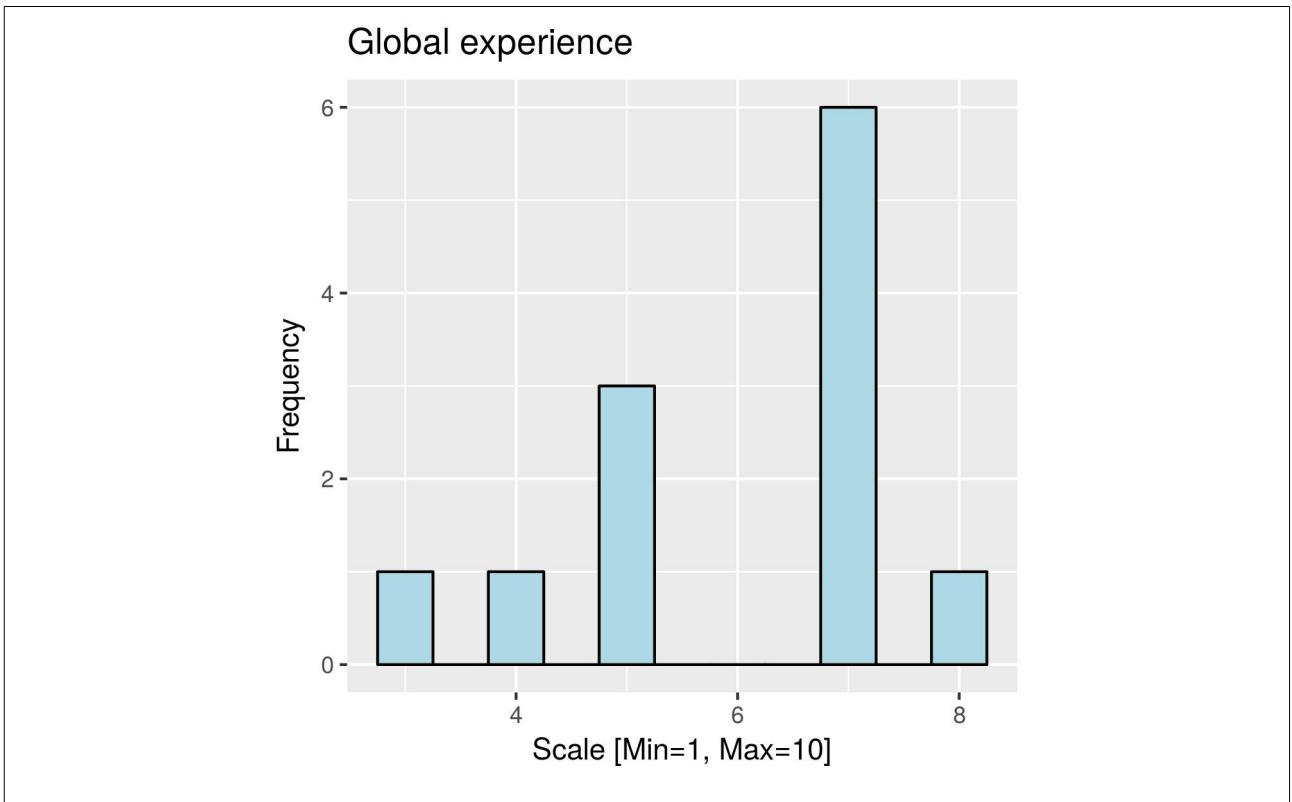


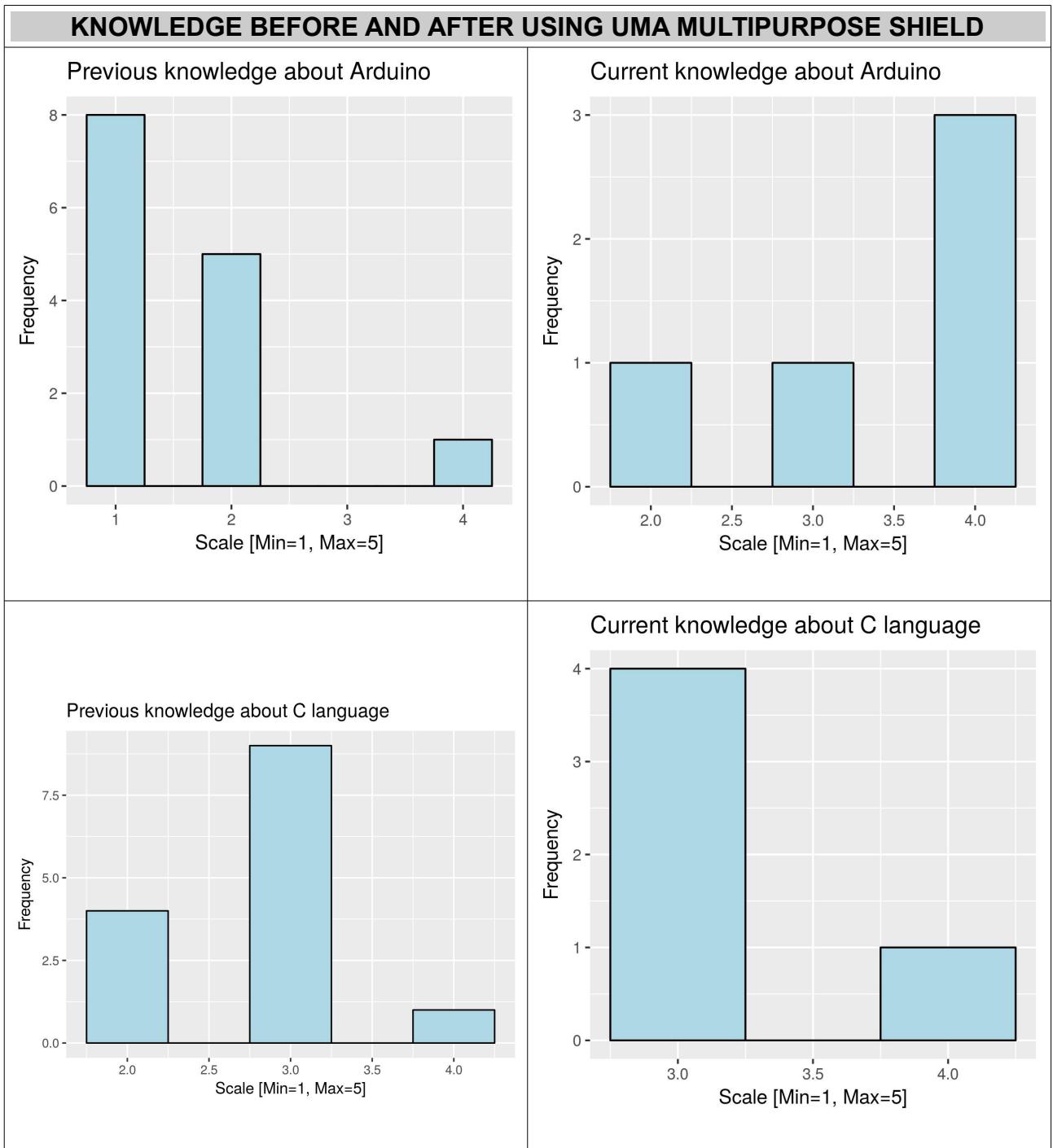
Quality of provided lab material



Teacher's attention

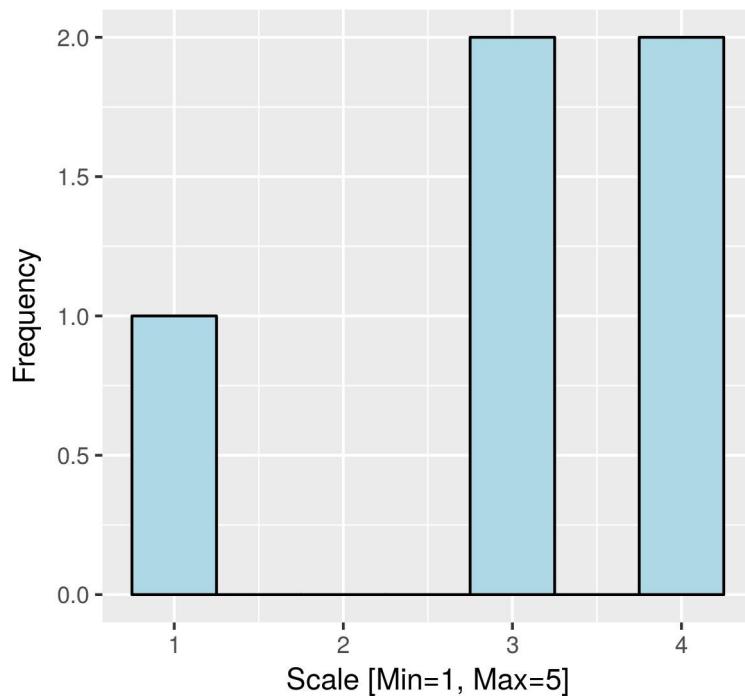




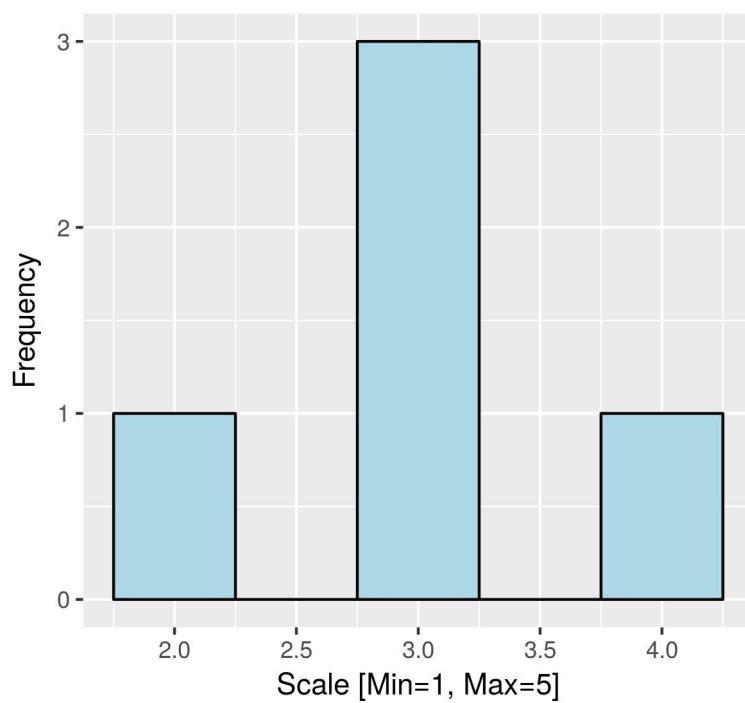


GLOBAL ASSESSMENT OF THE EXPERIENCE

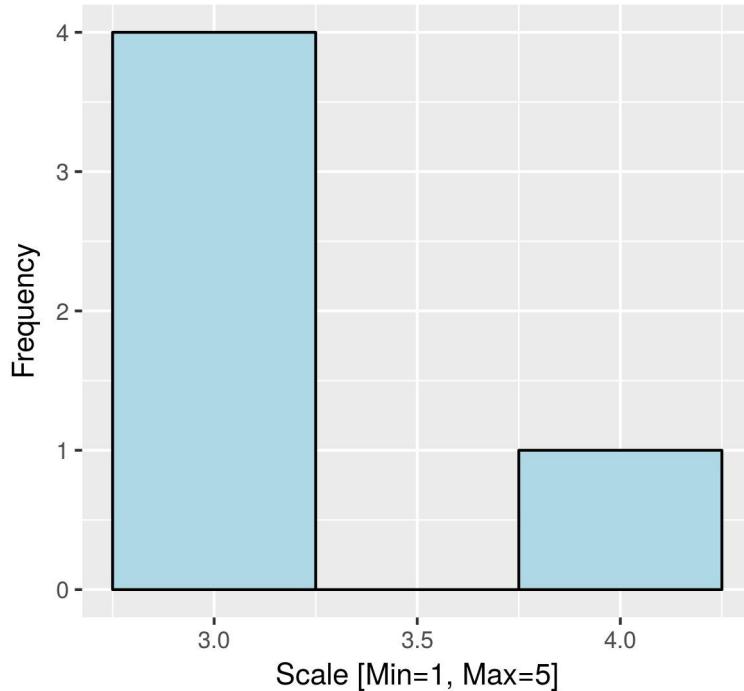
Programming board difficulty



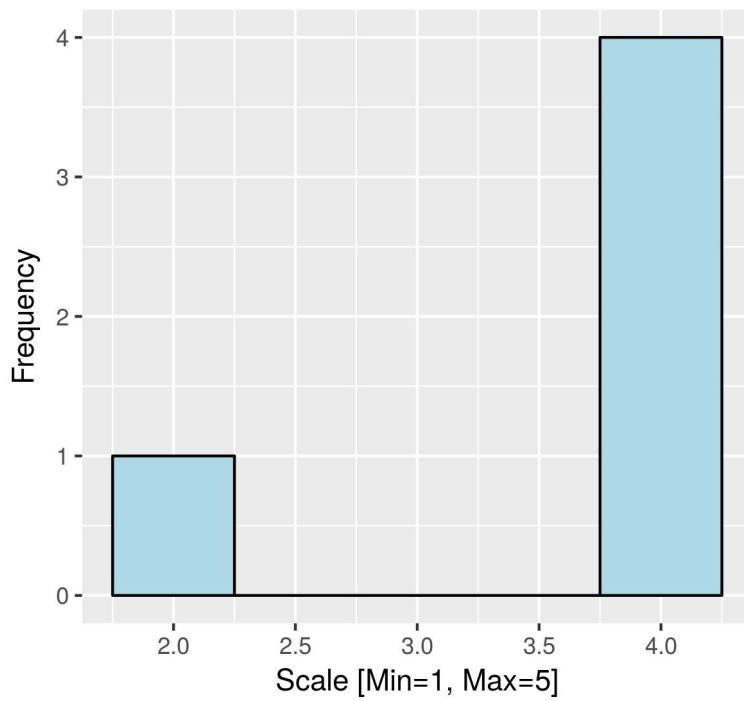
Operating board difficulty



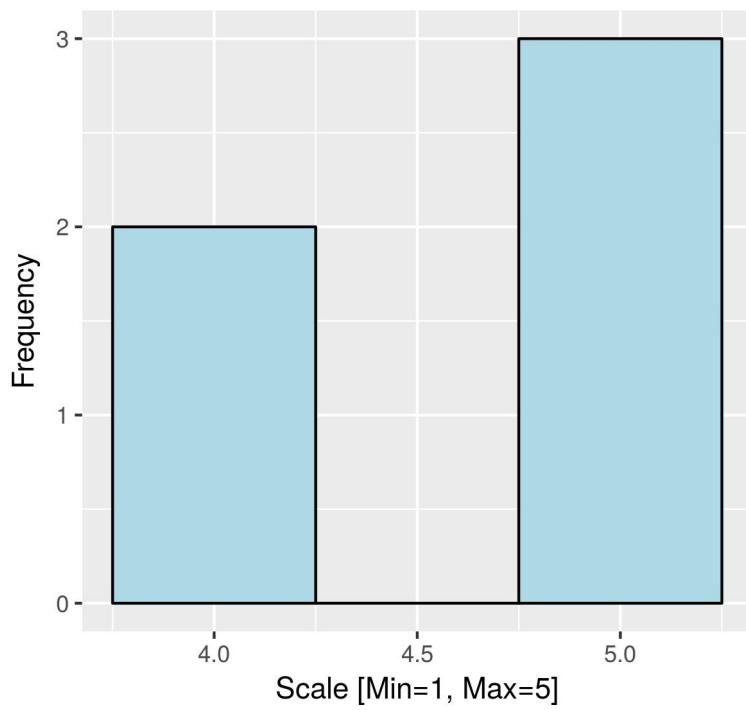
Lab practices difficulty



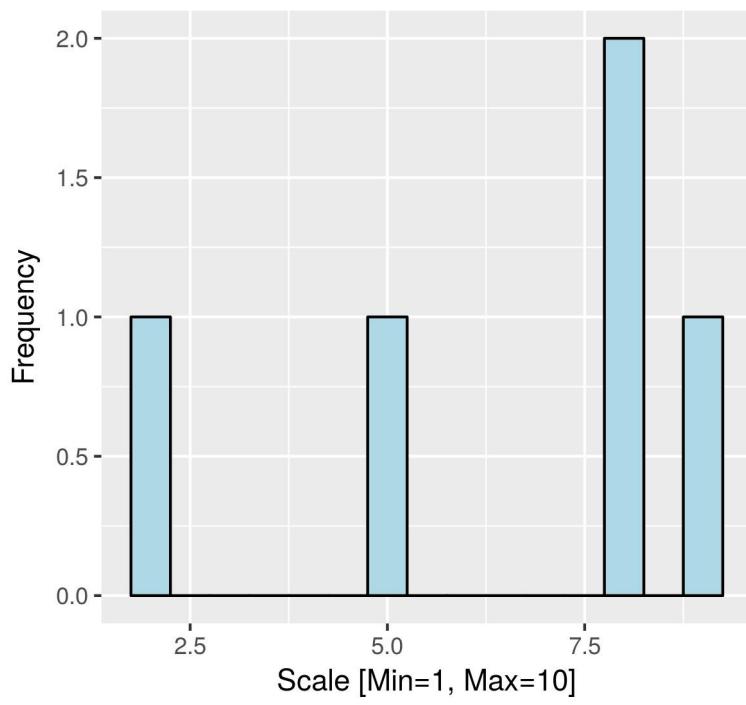
Quality of provided lab material

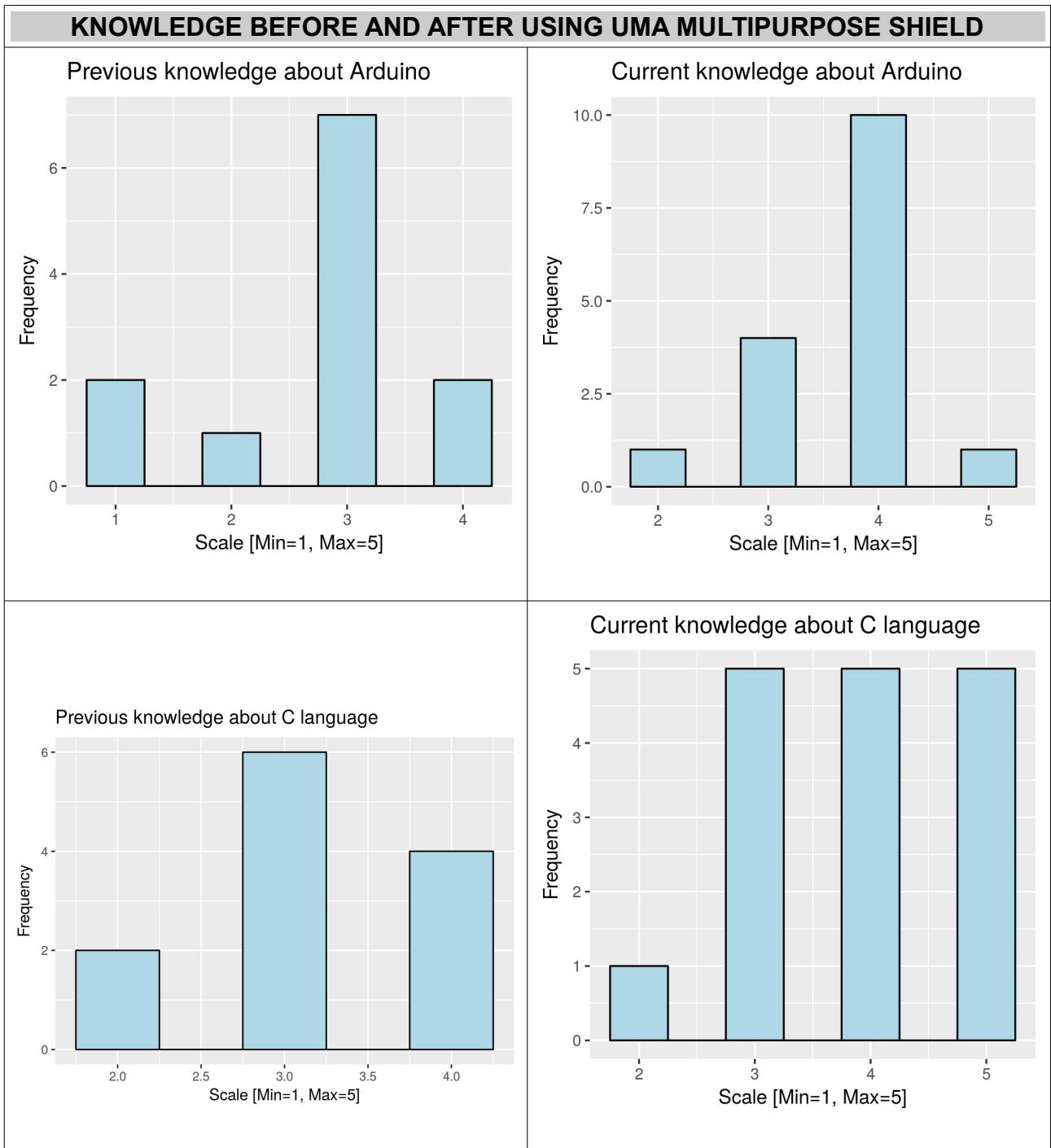


Teacher's attention



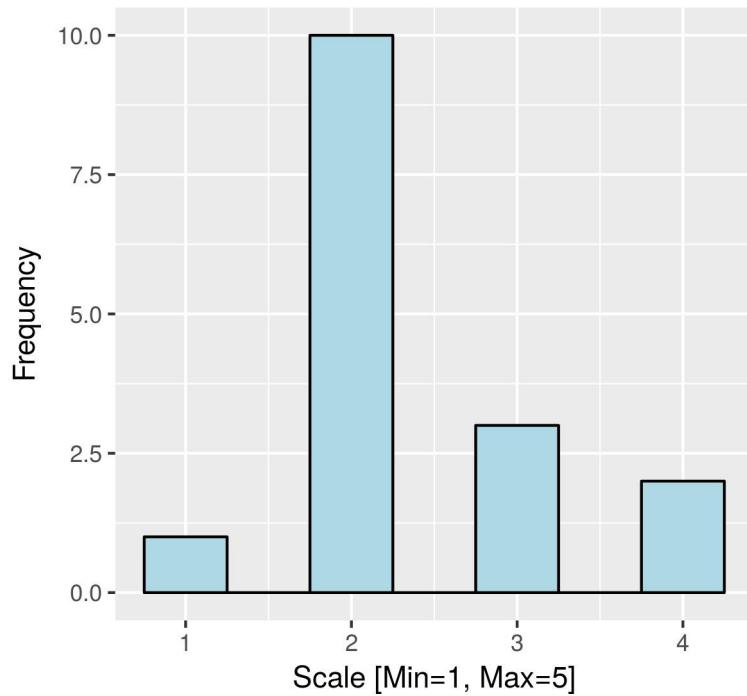
Global experience



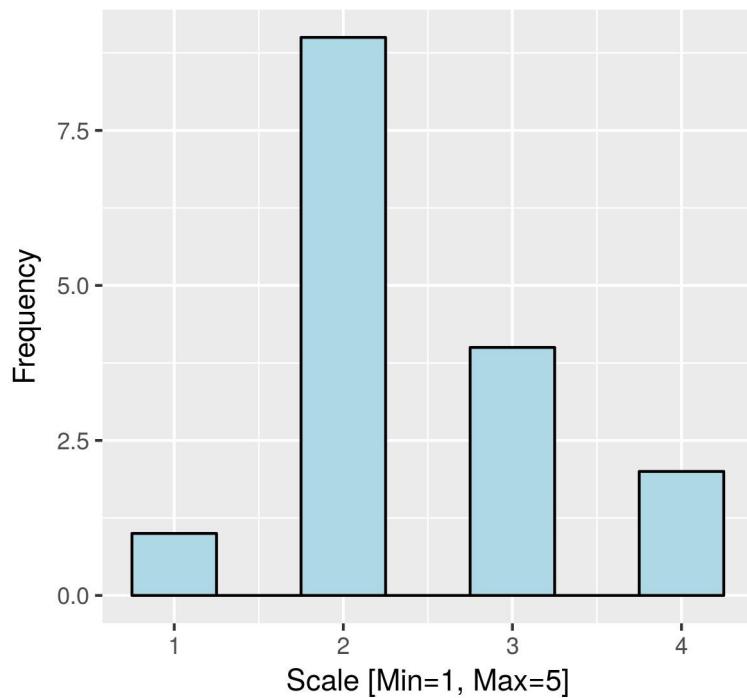


GLOBAL ASSESSMENT OF THE EXPERIENCE

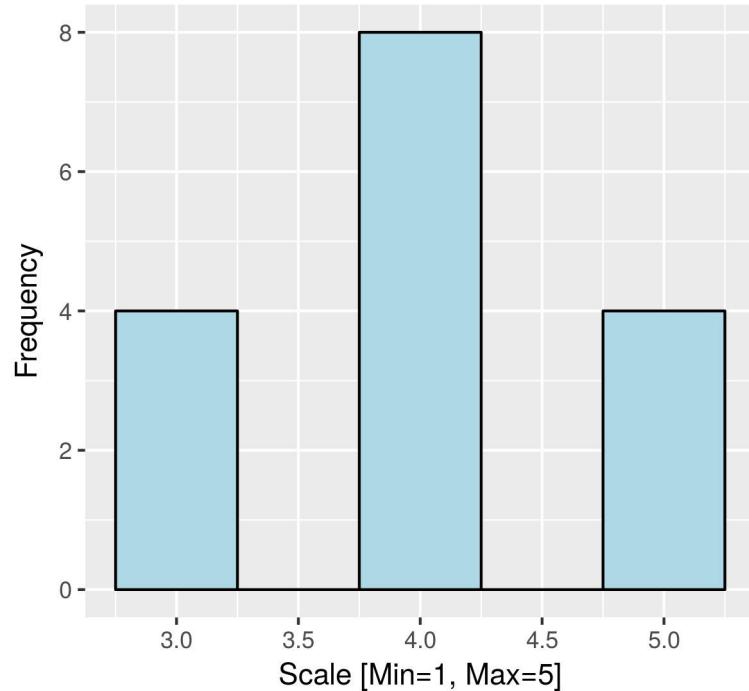
Programming board difficulty



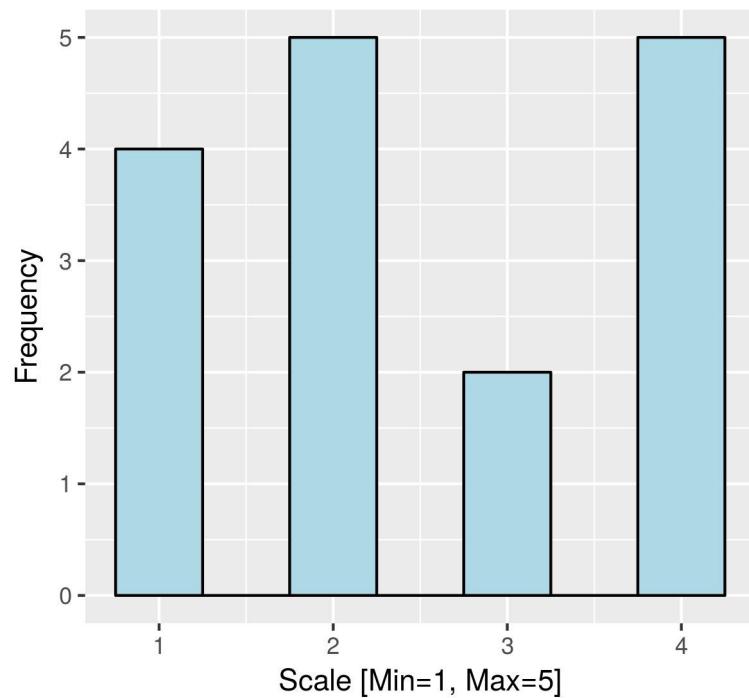
Operating board difficulty



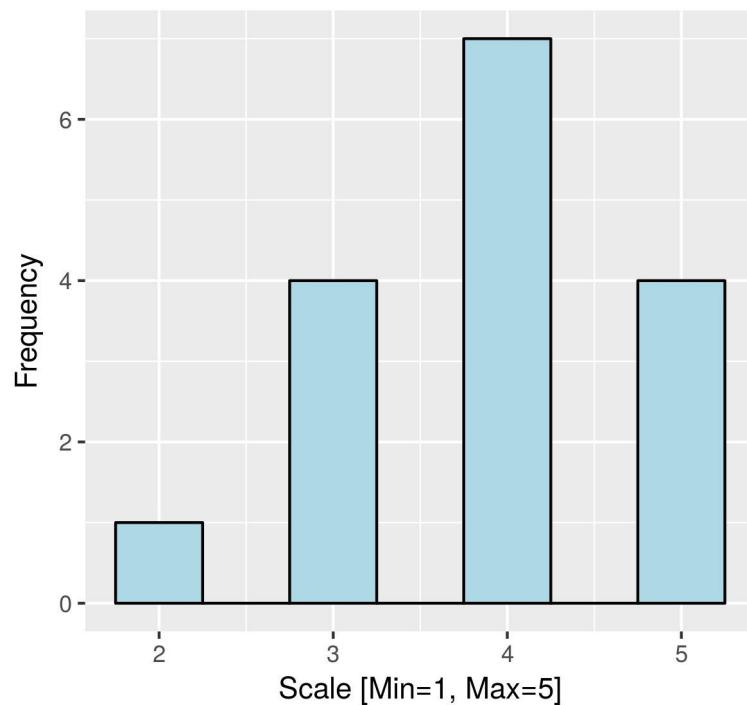
Lab practices difficulty



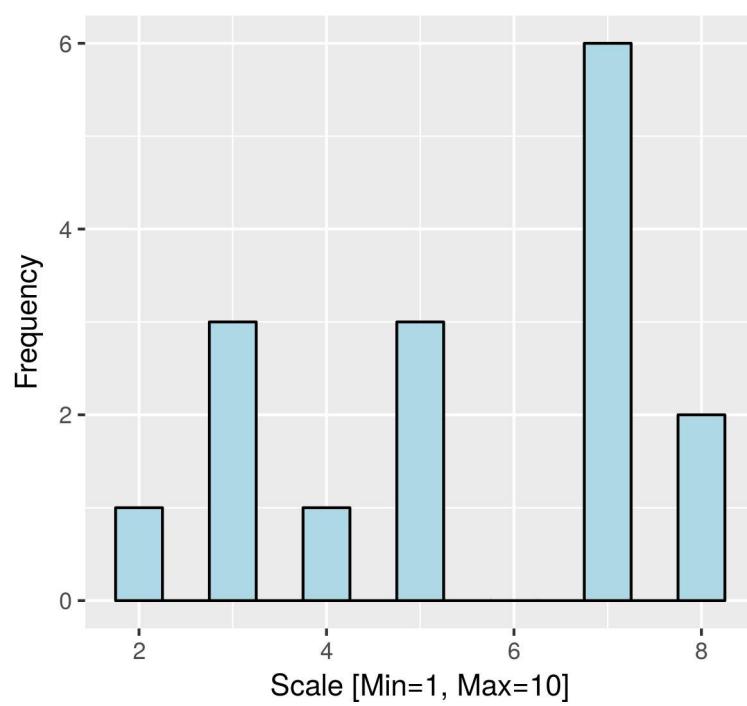
Quality of provided lab material



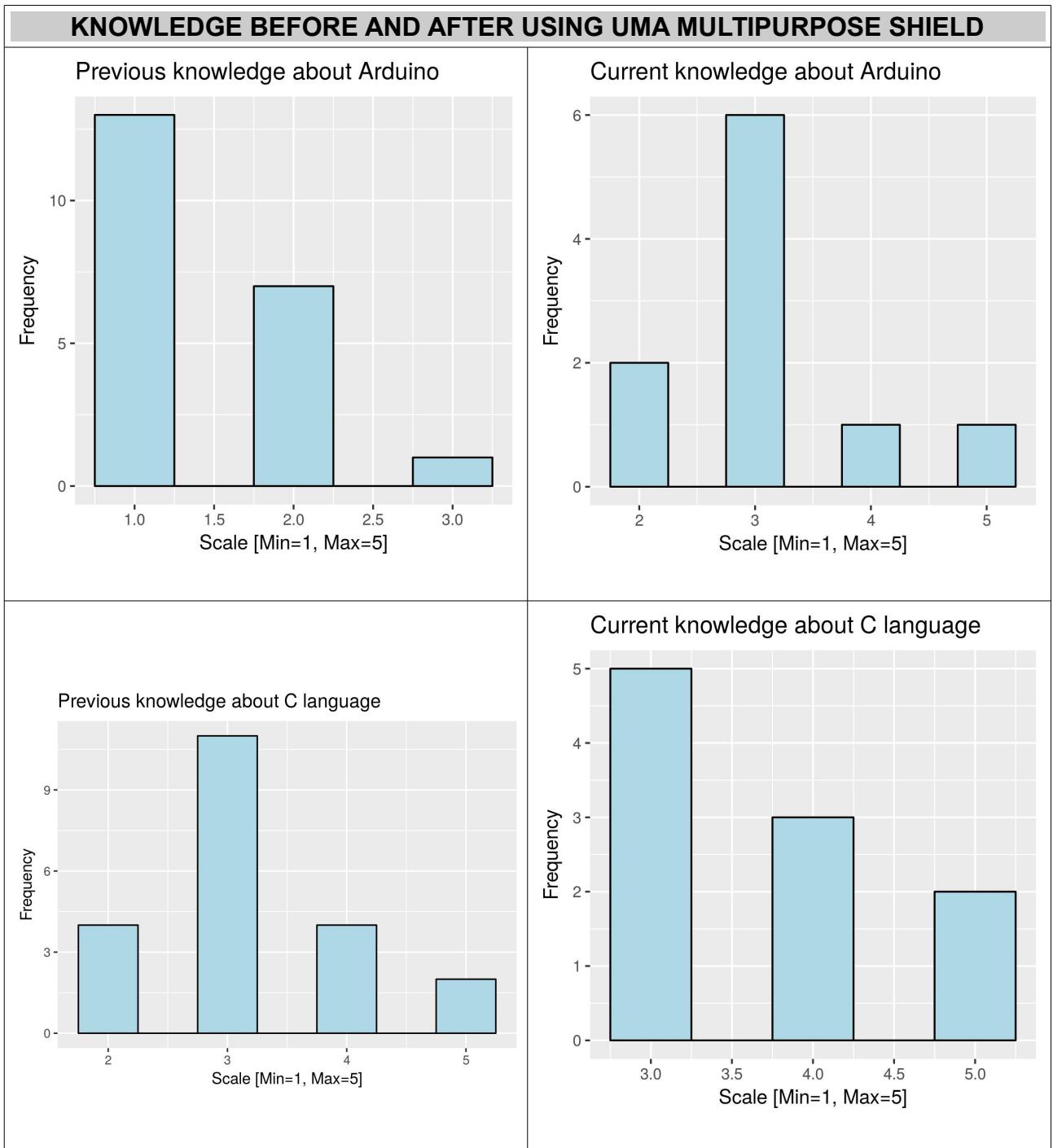
Teacher's attention



Global experience

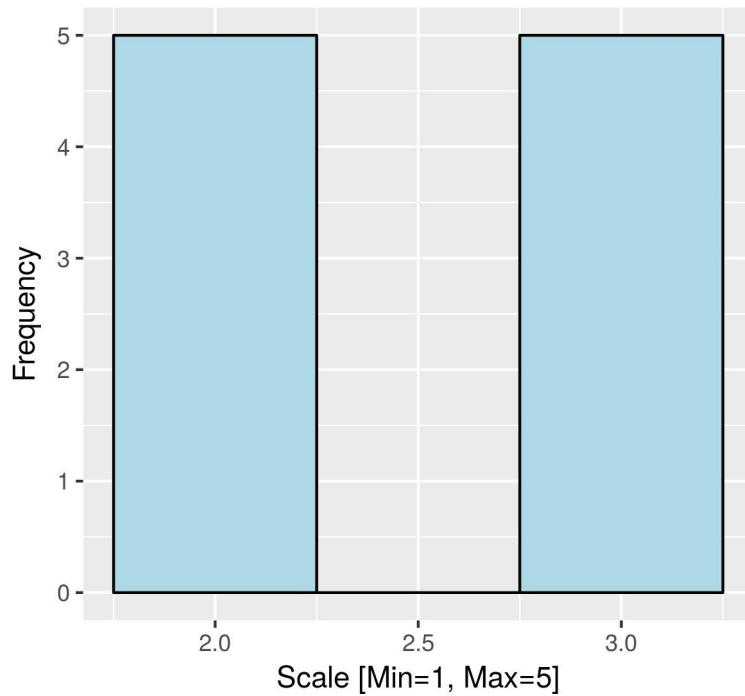


Course: Automatic Control (2016-2017)

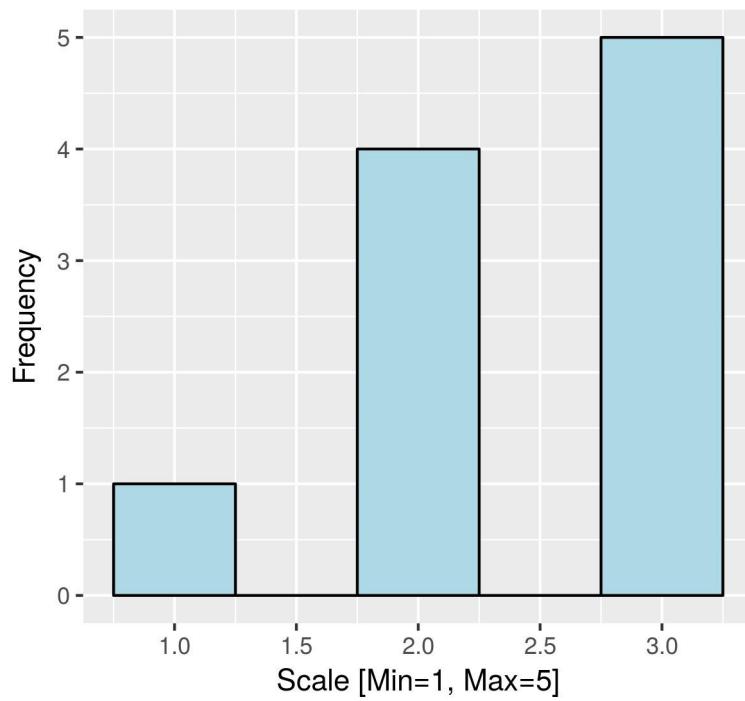


GLOBAL ASSESSMENT OF THE EXPERIENCE

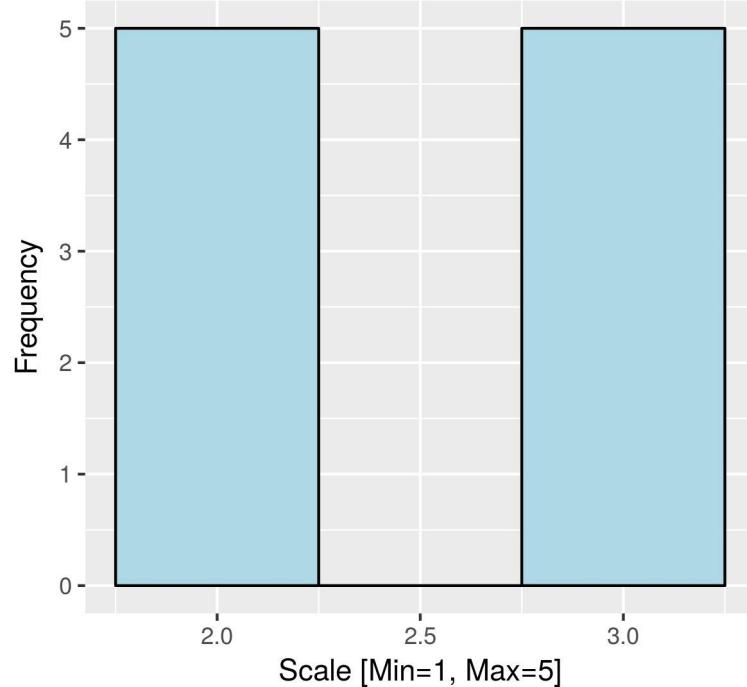
Programming board difficulty



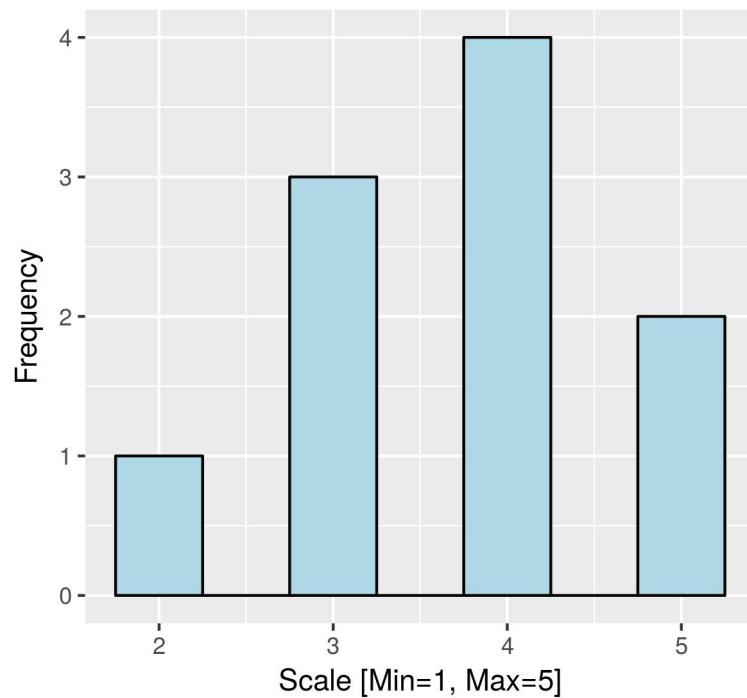
Operating board difficulty



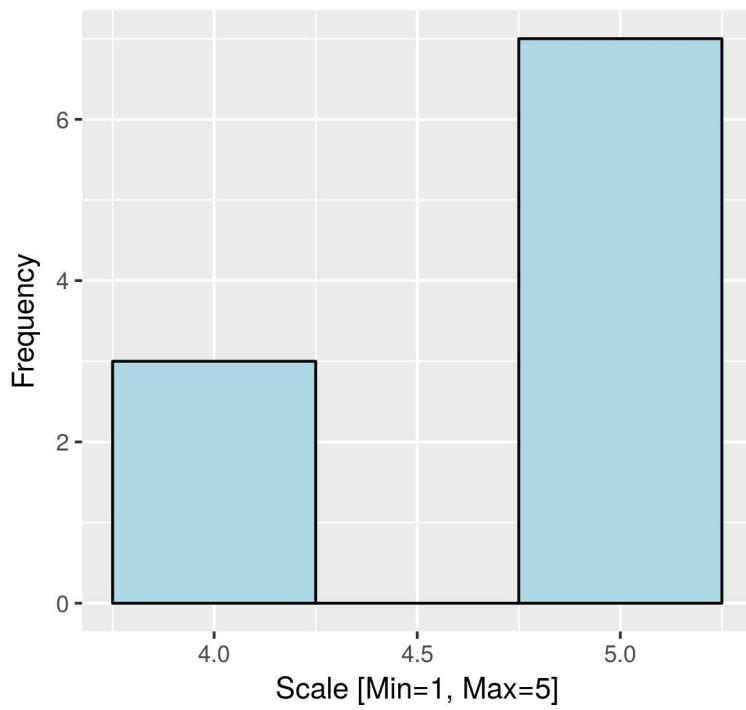
Lab practices difficulty



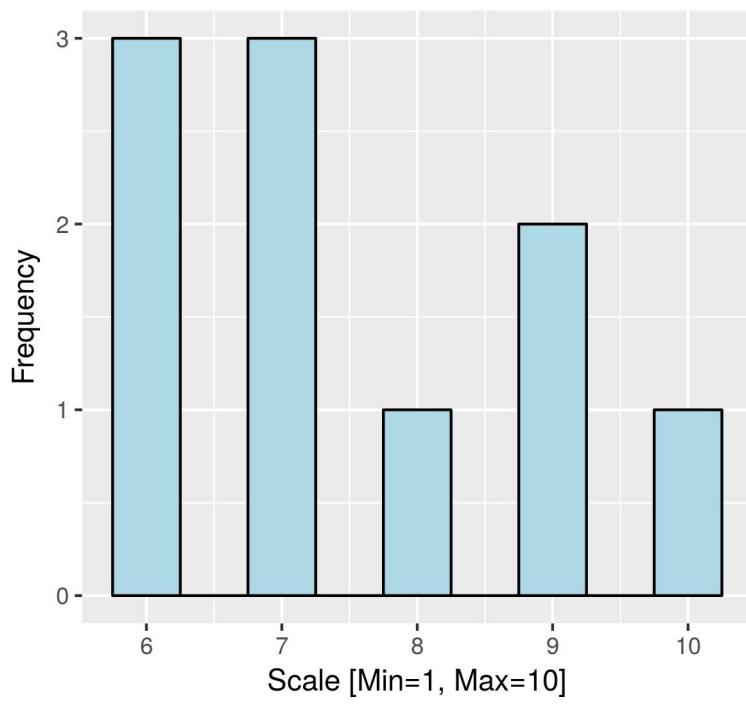
Quality of provided lab material



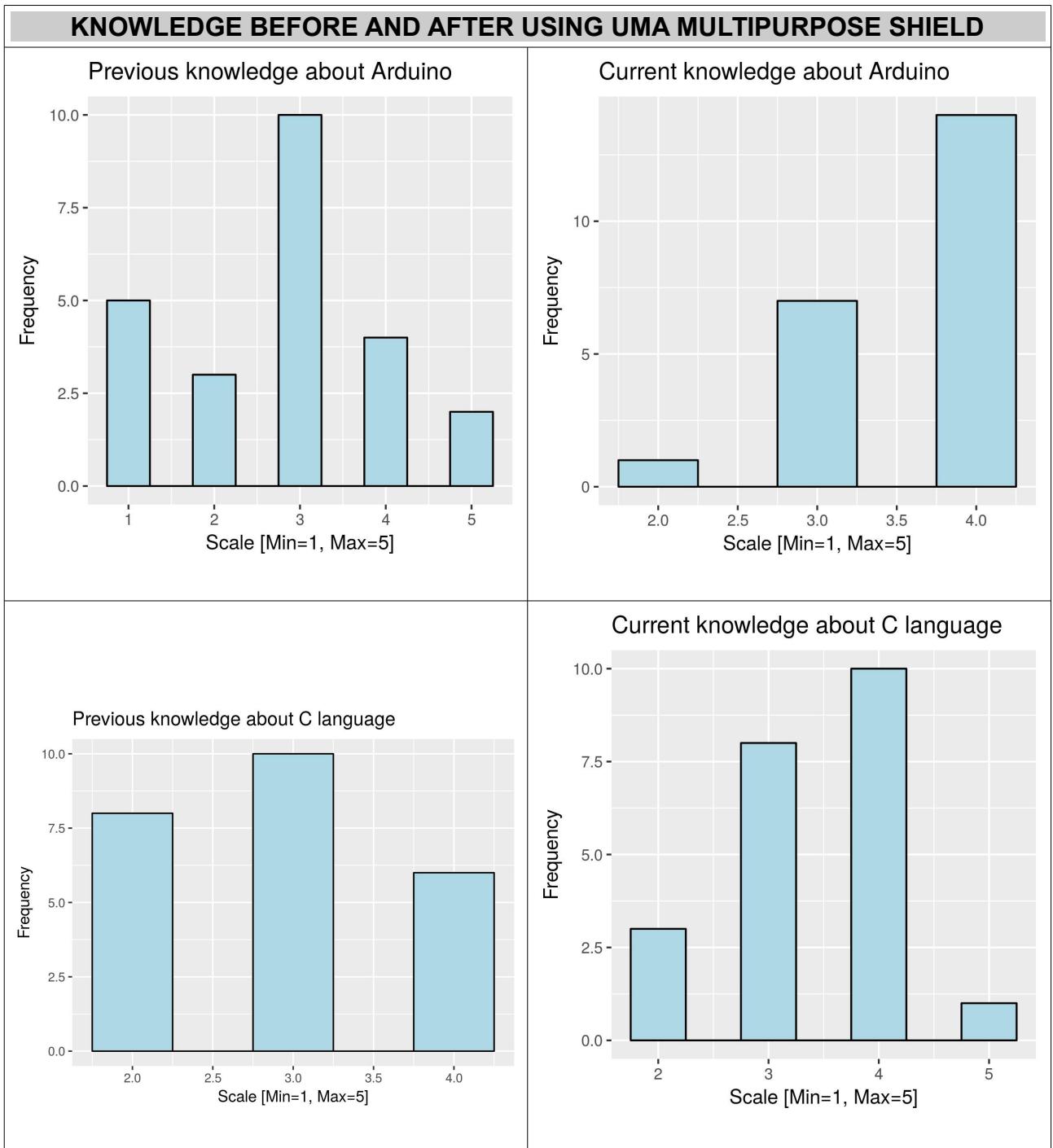
Teacher's attention



Global experience

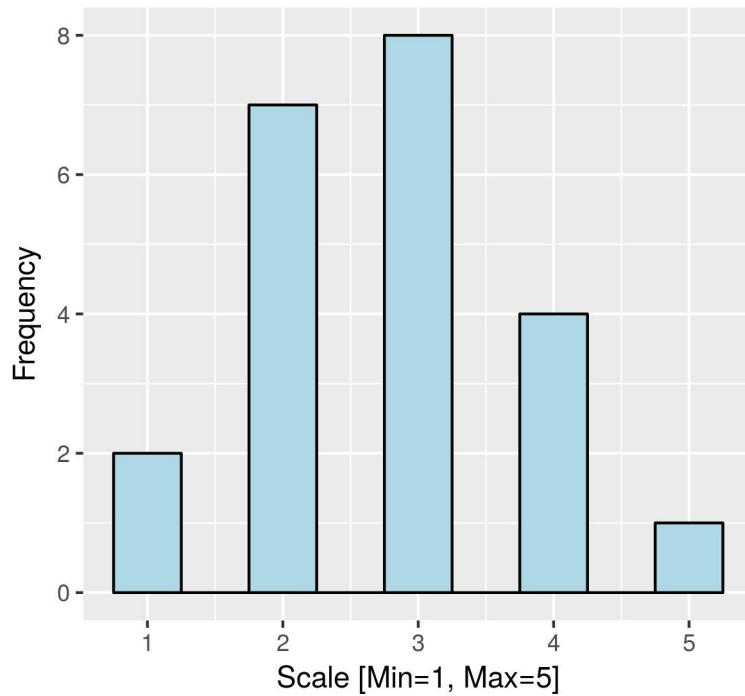


Course: Real Time for Mechatronics Systems (2016-2017)

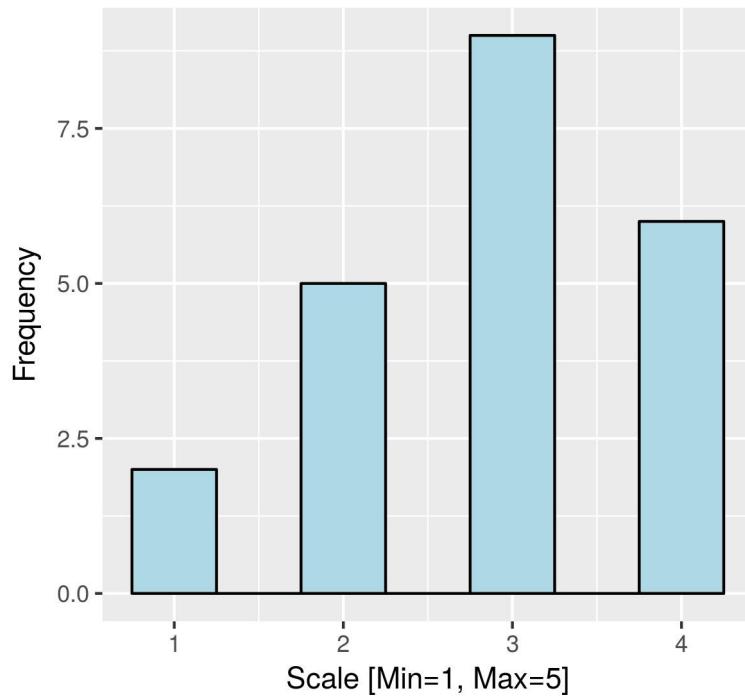


GLOBAL ASSESSMENT OF THE EXPERIENCE

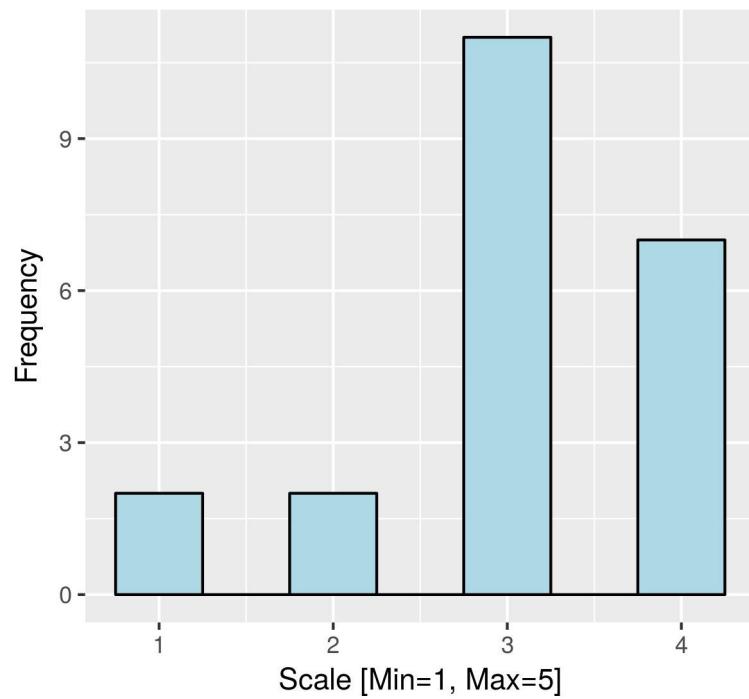
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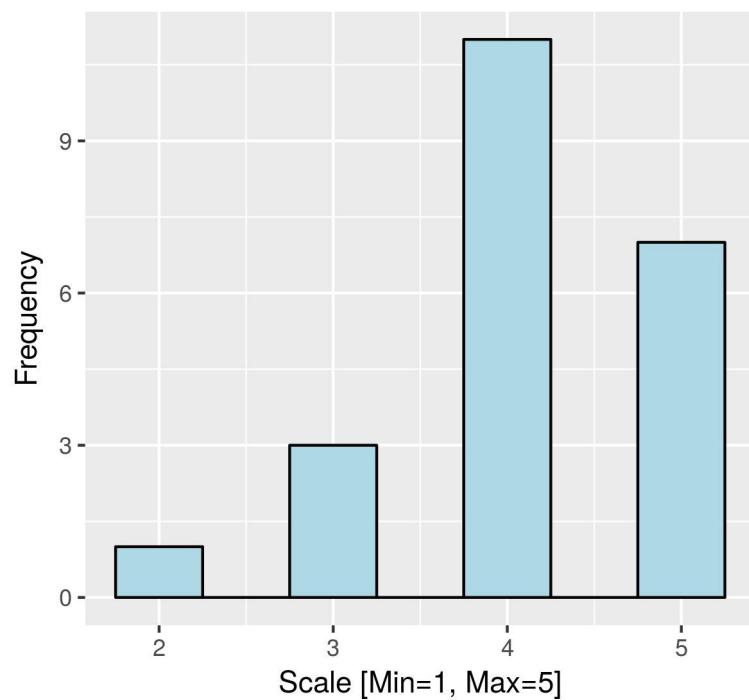
Operating board difficulty



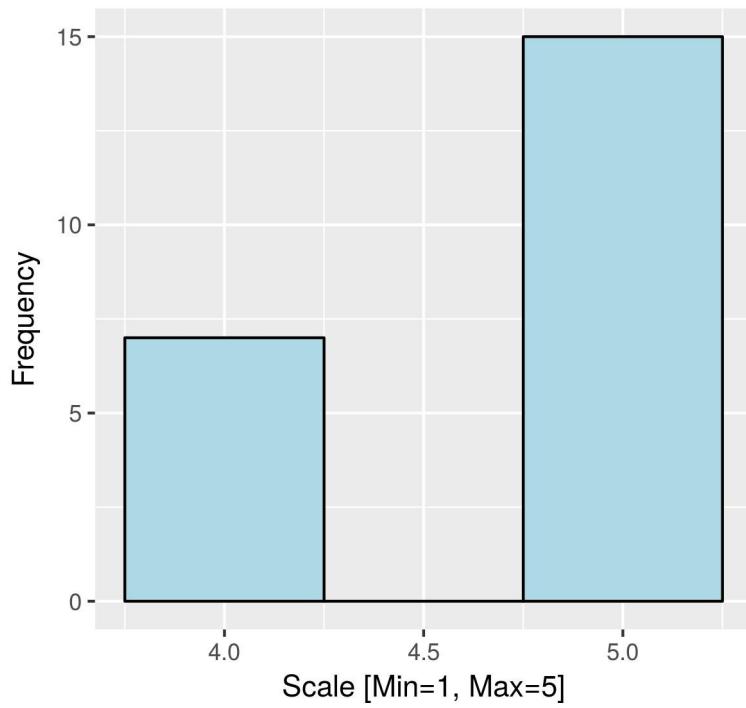
Lab practices difficulty



Quality of provided lab material



Teacher's attention



Global experience

