Analysis of demographic data obtained from people enrolled in massive open online courses developed by V.I.B.E.

The V.I.B.E. project developed three massive open online (MOO) courses that have been available on a widely-known website specifically designed for the dissemination of MOO courses (www.nau.edu.pt). A total of almost 5,000 people enrolled in the courses and 1,835 completed them. In the followings, we present the results of the analyses of demographic data provided by the MOO platform separately for each course.

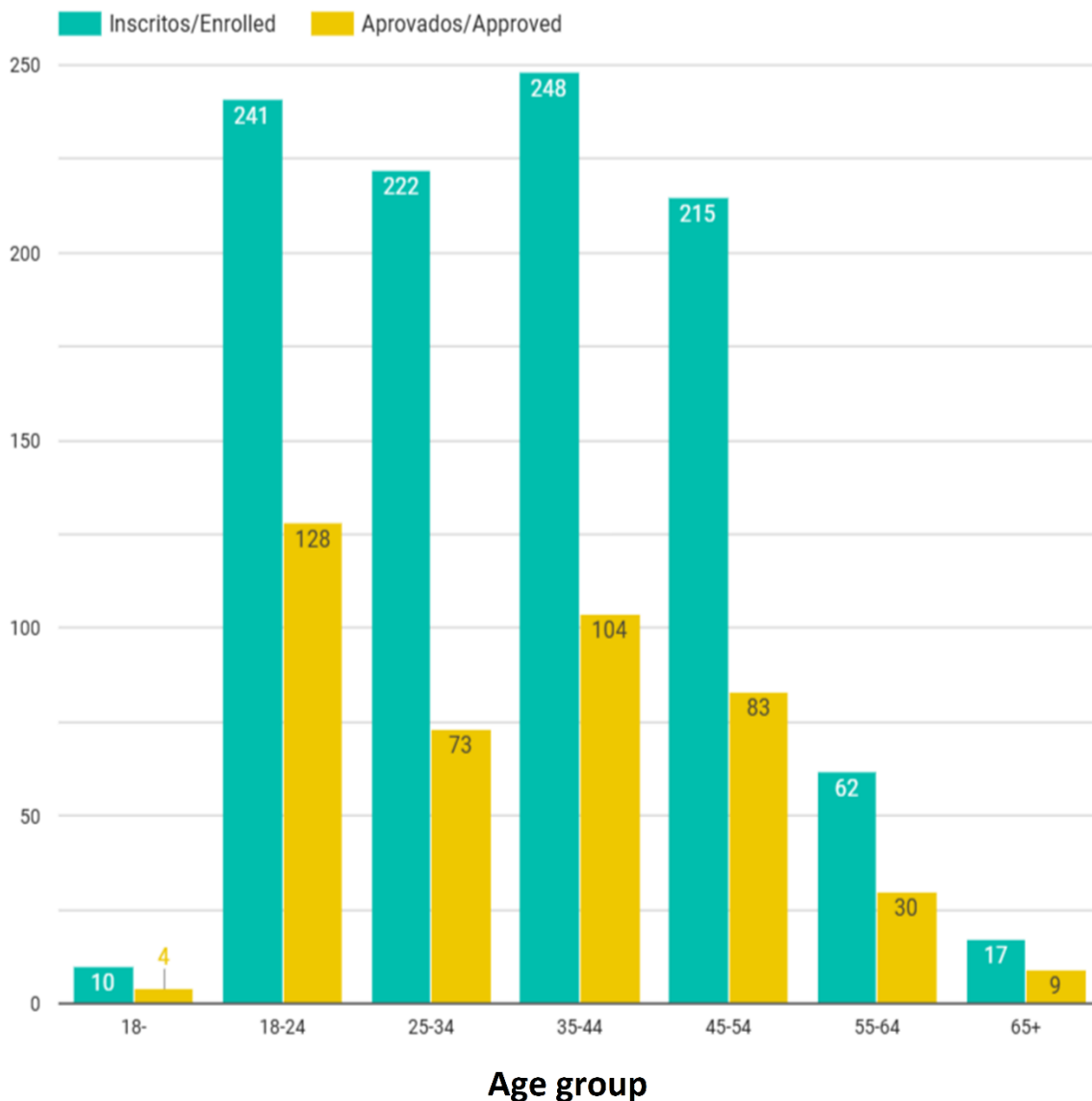## Exploring the Mysteries of Life: An Introduction to Cell Biology

Gender-based analysis

Significantly more women enrolled in the course than men ($\chi2(1) = 106.11$, $p < 0.001$). The gender distribution remained the same when analysing the number of learners who completed the course ($\chi2(1) = 18.24$, $p < 0.001$). However, the independent samples chi-square test analysing sex differences in terms of course completion showed that the number of men who finished the course was higher than expected and it was the other way around for women ($\chi2(1) = 4.31$, $p = 0.04$).
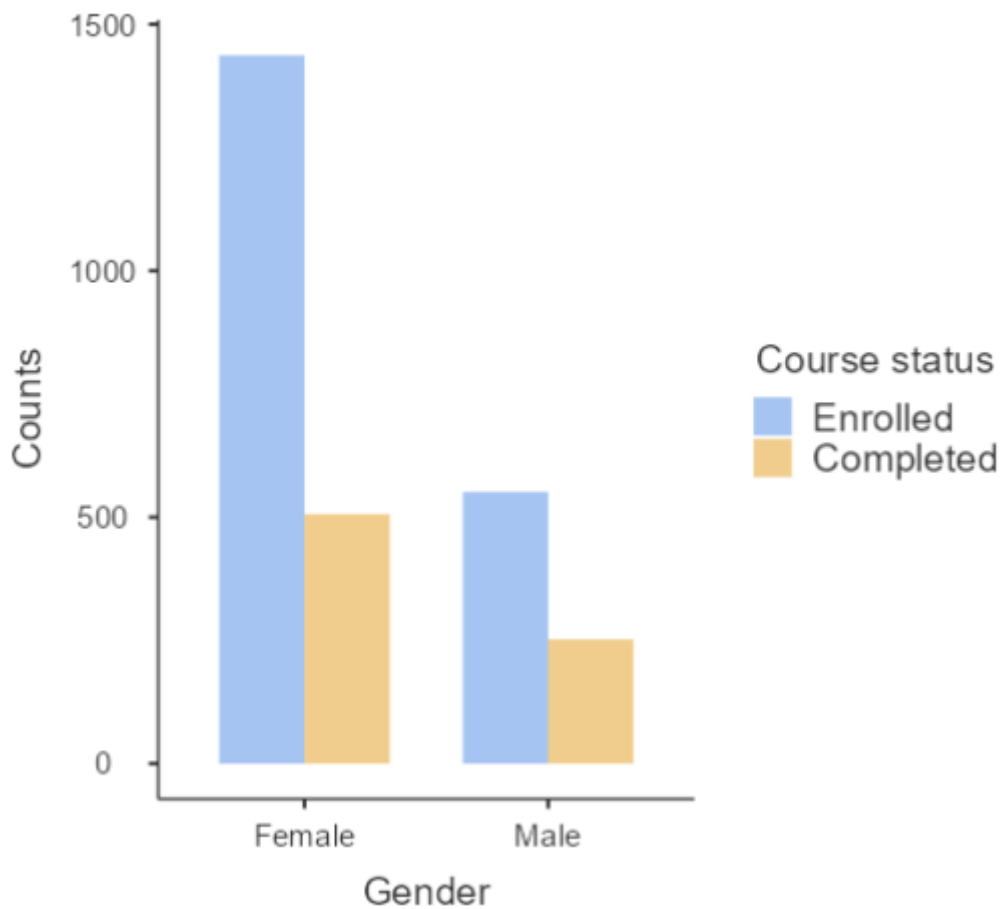
Analysis of age-related differences

The analysis of age groups among those who enrolled in the course showed that the distribution of age was strongly imbalanced ($\chi2(6) = 497.0$, $p < 0.001$): the main source of the imbalance was probably that learners below 18 years and above 55 years were underrepresented. The distribution was very similar among those who completed the course ($\chi2(6) = 225.39$, $p < 0.001$). Independent samples chi-square test showed no significant difference between the age groups in terms of course completion ($\chi2(6) = 9.01$, $p = 0.17$).

The psychology and physiology of stress

Gender-based analysis

Significantly more women enrolled in the course than men ($\chi2(1) = 394.87$, $p < 0.001$). The gender distribution remained the same when analysing the number of learners who completed the course ($\chi2(1) = 85.11$, $p < 0.001$). Similar to the first course, even though less men enrolled in the course, they were more likely to finish it: 31.4% of men finished the course, while 26.0% of women finished the course ($\chi2(1) = 7.84$, $p = 0.005$).

Analysis of age-related differences

The analysis of age groups yielded very similar results to the first course: learners below 18 years and above 55 years were underrepresented among those who enrolled ($\chi2(6) = 1113.12.0$, $p < 0.001$). This pattern was also observed among those learners who finished the course ($\chi2(6) = 362.12$, $p < 0.001$). Similar to the first course, independent samples chi-square test showed no significant difference between the age groups in terms of course completion ($\chi2(6) = 6.85$, $p = 0.34$).

Age group
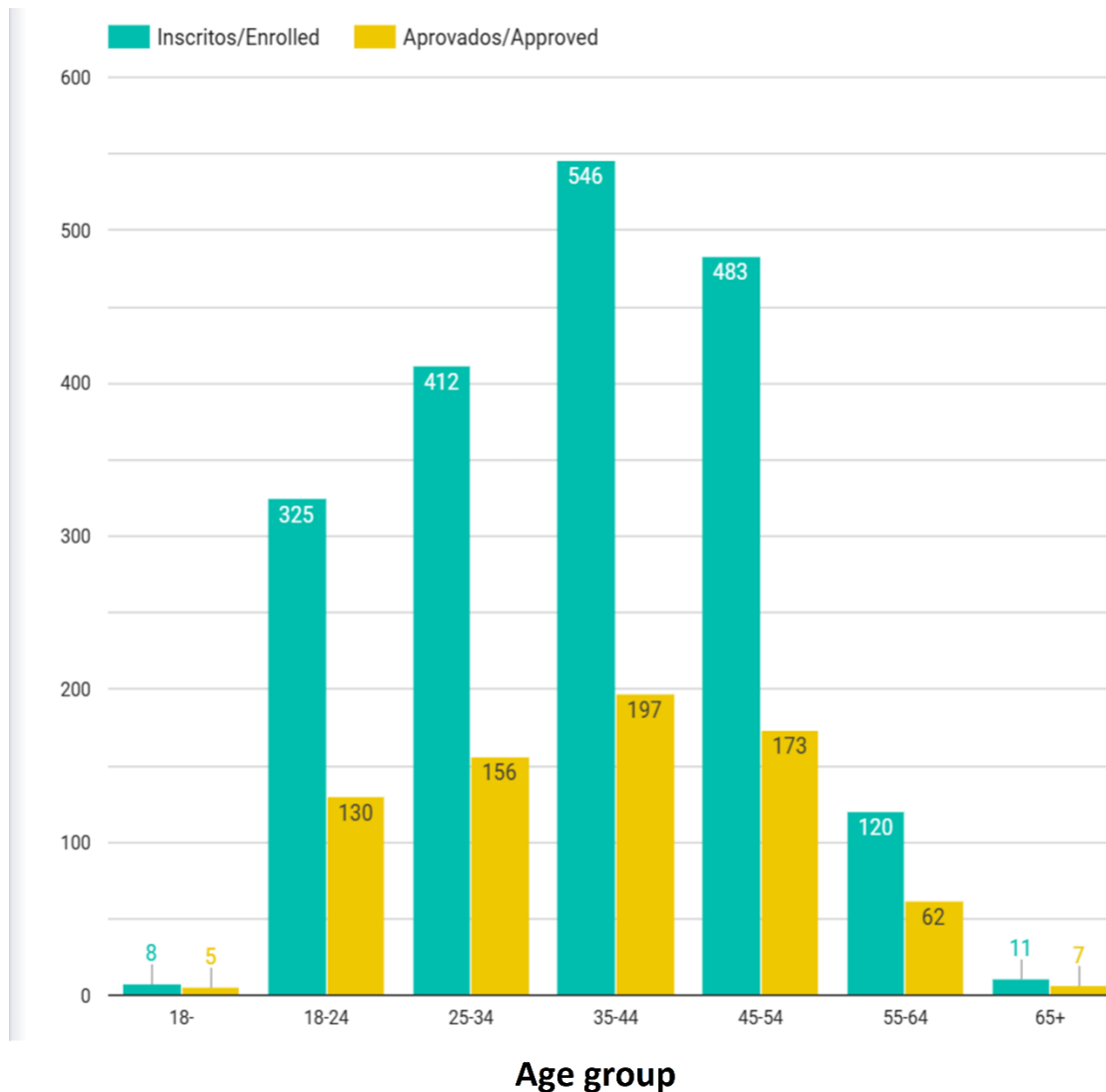
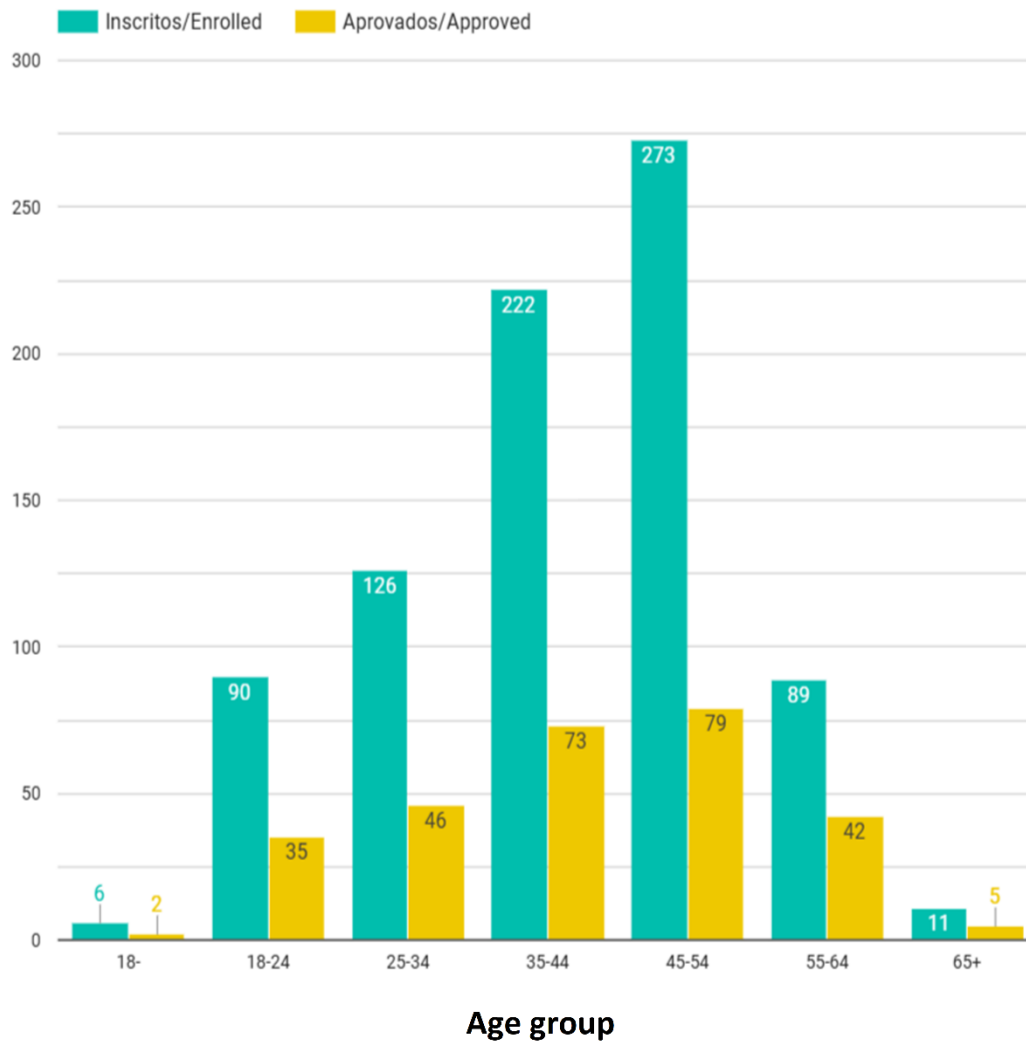## Introduction to the use of Virtual and Augmented Reality in STEM Education

Gender-based analysis

No significant sex difference ($\chi 2(1) = 0.14$, $p = 0.71$): 50.5% were female, 49.2% were male and the remaining 0.3% did not report their gender/reported other. Interestingly, the gender distribution changed when the analysis was carried out among those who completed the course: significantly more men finished the course than women ($\chi 2(1) = 16.67$, $p < 0.001$). When comparing the two genders in terms of course completion, a similar patter as in case of the previous courses was observed: men (30.4%) were more likely to finish the course compared to women (20.8%) ($\chi 2(1) = 13.29$, $p < 0.001$).

Analysis of age-related differences

The analysis of age groups yielded similar results to the previous courses. Among those who enrolled, people below 18 years (0.7%) and above 65 years (1.3%) were strongly underrepresented, while between 45 and 54 years were rather overrepresented (33.4%) ($\chi 2(6)$ = 518.46, p < 0.001). The distribution among those who finished the course was also strongly imbalanced ($\chi 2(6)$ = 132.64, p < 0.001). Similar to the previous two courses, the age groups did not significantly differ from each other in terms of course completion.

Age group

Legend: Inscritos/Enrolled (teal), Aprovados/Approved (yellow)

Data by age group (Enrolled / Approved):
- 18-: 6 / 2
- 18-24: 90 / 35
- 25-34: 126 / 46
- 35-44: 222 / 73
- 45-54: 273 / 79
- 55-64: 89 / 42
- 65+: 11 / 5

Conclusions

In sum, it is very positive that several thousands of people were reached and a significant proportion of these people completed the courses. In the followings, we highlight a few important conclusions drawn based on the analyses of demographic data:

- More women then men enrolled in our courses, except from the "*Introduction to the use of Virtual and Augmented Reality in STEM Education*" course, where the distribution of gender was balanced.
- Although less men enrolled in the courses, they were more likely to finish the course they enrolled in.
- Regardless of whether they completed the course, most learners were middle-aged and the youngest as well as the oldest age groups were underrepresented in case of all three courses.
- Unlike gender, age did not seem to be a factor predicting the likelihood of course completion.