















FS value is directly associated with the exploration of all activity scenarios, and the students do not explore all possibilities, resulting in low FS values.

In conclusion, students using the e-learning environment were driven by gamification elements to perform learning activities and follow a teacher defined path. The results also prove that a gamified e-learning environment may affect the students' behavioral and cognitive engagement. Moreover, the e-learning environment is a powerful tool for teachers to make summative assessments and can also provide important feedback data during the development of the course.

## 7. References

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## 8. Acknowledgements

The authors wish to thank the research funding agency CAPES for the scholarship granted to the post-graduate student author of this paper.