Lessons learned: creating tutorials teaching Agent-Based Modelling for Archaeologists

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1 Introduction

ABM application increased in Archaeology

No formal training

EU project

2 Method

During the project we have developed tutorials. The tutorials were first designed using storyboards which were later converted into tutorials using NetLOGO Web (https://www.netlogoweb.org/launch) and Javascript (). The tutorials were developed together and we worked together using GitHub (https://github.com/lljvdk/EU-ABMA/). During the project initial testing was done with all authors and issues in GitHub were used to tackle bugs.

The tutorial were tested during various online and in-person conferences. In addition, we also had students working with the tutorials at Saxion Universty of applied sciences and Leiden University. We used the feedback of the participants to improve the tutorials. The feedback was obtained structurally using two surveys using Qualtrics. The participants of the events were asked to answer questions of a survey before participating. We used the answers to understand what the background of the participants was and to get an estimate of their level of knowledge in relation to ABM (see appendix ... for the questions). After the participants worked with the tutorials during the event they were asked to answer a second survey. Questions of this survey were aimed at the measuring the effectiveness of the tutorials and getting feedback on the workshop and tutorials (see appendix ... for the questions). For some events participants had to register beforehand and we were able to send the pre-workshop survey by email. At other events no registration was possible or necessary and the pre-workshop survey was given at the start of the event. The post-workshop survey was distributed using QR-codes or links at the end of the workshop during the event. After each event we have improved the tutorials based on the received feedback.

Table 1: Conferences, events and situations were the workshops given and the tutorials were tested.

Conference or event	Period	Online, in person or hybrid	Number of participants	Number of registrations
CAA Amsterdam	April 2023	In person		
EAA Belfast	August 2023	In person		No registration

Conference or event	Period	Online, in person or hybrid	Number of participants	Number of registrations
CAA-DE/NL-Fl Online workshop	October 2023	Online		
Reuvensdagen	November 2023	In person		No registration
CAA-UK	November 2023	Hybrid		
Leiden (course)	December 2023	In person		
Aarhus	January/February 2024	Online	178	400
Saxion	March 2023-January 2024	In person	18	

The surveys were analysed using R (R Core Team 2023). The following packages were used for analyses: ggplot2 (Wickham 2016), dplyr (Wickham et al. 2023), tidyr (Wickham, Vaughan and Girlich 2023), forcats(Wickham 2023a) , lubridate (Grolemund and Wickham 2011) and stringr (Wickham 2023b). The date and the code is available at https://github.com/RonaldVisser/ABM_tutorials and (... insert Zenodo reference...)

3 Results

3.1 Tutorials

3.2 Before tutorial

The participants of the workshop came from many different countries all over the world.

3.3 After tutorial

3.4 Final tutorials

3.5 Dissemination of tutorials

Website

4 Conclusion

Lessons learned

Future aspects

5 Acknowledgements

The roles of this paper according to CReDiT (Contributor Roles Taxonomy):

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References

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R Core Team. 2023 *R: A language and environment for statistical computing*.

Wickham, H. 2016. *ggplot2: Elegant graphics for data analysis*. Springer-Verlag New York.

Wickham, H. 2023a *Forcats: Tools for working with categorical variables (factors)*.

Wickham, H. 2023b *Stringr: Simple, consistent wrappers for common string operations*.

Wickham, H, François, R, Henry, L, Müller, K and Vaughan, D. 2023 *Dplyr: A grammar of data manipulation*.

Wickham, H, Vaughan, D and Girlich, M. 2023 *Tidyr: Tidy messy data*.