| Variable | Explanation, factor levels | Reference(s) | Type |
| --- | --- | --- | --- |
| Model 1 |  | | |
| Score gain | Difference of post-test scores and pre-test scores (sum totals of all points scored in pre- and post-test, respectively) (questions 1, 2a and b, 3a and b) | ‑ | Dependent |
| Test type | Pre-test *or* post-test | ‑ | Explanatory, fixed |
| University/Group/ID |  | ‑ | Random factor |
| Model 2 |  | | |
| Score gain | Difference of post-test scores and pre-test scores (sum totals of all points scored in pre- and post-test, respectively) (questions 1, 2a, 3a) | ‑ | Dependent |
| Knowledge level | Level of knowledge that is required to answer a certain question: ‘taxonomic concept knowledge’ (questions 1 and 2a), ‘declarative species knowledge’ (question 3a) | According to Bloom’s taxonomy of learning (Anderson et al., 2001; Crowe et al., 2008) | Explanatory, fixed |
| Test type | Pre-test or Post-test | ‑ | Explanatory, fixed |
| Test type: knowledge type | Term to test for interaction between the test type and the knowledge type | ‑ | Explanatory, fixed |
| University/Group/ID |  | ‑ | Random factor |
| Model 3 |  | | |
| Score gain | Difference of post-test scores and pre-test scores (sum totals of all points scored in pre- and post-test, respectively) (questions 1, 2a, 3a) |  | Dependent |
| Scores pre-test | Pre-test scores of each learner (sum total of all points scored in the pre-test)  (questions 1, 2a, 3a) | ‑ | Explanatory, fixed |
| Gender | Gender of each learner | [Brähmer (2006)](#_ENREF_2) [Fančovičová and Prokop (2011)](#_ENREF_4) | Explanatory, fixed |
| Latin | Yes/No: Whether or whether not a learner had Latin at school | [Haag (2001)](#_ENREF_5) | Explanatory, fixed |
| Age | Age of participant in years | - | Explanatory, fixed |
| Organisation | Yes/No: Whether or whether not the learner is member of an environmental organization | [Frobel](#_ENREF_10) and Schlumprecht (2016) | Explanatory, fixed |
| Attendance | Percentage of class days on which a participant was present in the course (student´s estimate), from 1 (< 50 %) to 2 (> 50 %) | [Bromme](#_ENREF_5) et al. (2004) | Explanatory, fixed |
| Self-study | Hours spent on self-study (student´s estimate), from 1 (up to 1 h self-study per week) to 2 (more than 1 hour of self-study per week) | - | Explanatory, fixed |
| University/Group |  | ‑ | Random factor |
| Model 4 |  |  |  |
| Score gain | Difference of post-test scores and pre-test scores (sum totals of all points scored in pre- and post-test, respectively) (questions 1, 2a, 3a) | ‑ | Dependent |
| Group size | Minimal group size of a learning group, equals the number of returned paired pre- and post-tests | [Bromme](#_ENREF_5) et al. (2004) | Explanatory, fixed |
| Field trip | Yes/No, Whether or whether not field trip (teaching and learning outside of the classroom) were part of the course | Rickingson et al (2004) Fančovičová and Prokop (2011) | Explanatory, fixed |
| Study programme | Study programme in which a student was enrolled | - | Explanatory, fixed |
| Instructor | Instructor for the respective course(s) | [Hattie (2009)](#_ENREF_6) | Explanatory, fixed |
| University |  |  | Random factor |

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