5-MIN-BIOLOGY
a method to enhance species knowledge
Jonathan Hense & Annette Scheersoi
Rheinische Friedrich-Wilhelms-University Bonn, Biology Education

BACKGROUND
Biodiversity loss and its impact on humanity is one of the key challenges of the 21st century (e.g. CARDINALE et al., 2012). This problem is even more aggravated by the loss of species knowledge in society and also in science (e.g. FRIBEL & SCHLUMPFRECHT, 2016; RSPB, 2017). This extinction of the experience (expert knowledge) has a strong effect as species knowledge is a prerequisite for the research on biodiversity loss and therefore for conservation approaches (MILLER, 2005; COX & GASTON, 2015).

GENERAL CHARACTERISTICS
The method was developed by ALPHEON BEILER (1965) and redefined by STICHMANN (1992) and describes a short (5 minutes) off-topic and repetitive period at the beginning of a regular teaching situation, which can be used to either take up issues of the audience’s current interest or to develop species knowledge.

The method was originally developed for a school setting, but it is also applicable for the university context.

AIMS
The aim of a 5-min-biology is to develop students’ interest in biological topics. Interest is the main precondition for knowledge acquisition and learning (e.g. SCHIEFELE, 2009).

DESIGN PRINCIPLES
A 5-min-biology for the enhancement of species knowledge should consider the following design principles (STICHMANN, 1992; HENSE et al., in prep):

• consistent structure through:
  • same compilation of components/objects
  • similar look of illustrations
  • order of presentation
  • focus on the most important features
  • „Stützwissen“ (catchy information or anecdotes which are astonishing, surprising or contra-intuitive)
  • short repetition of previously presented species
  • opportunity for self-evaluation of individual learning progress
  • first-hand experience with originals, e.g. living organisms or preserved specimens (taxidermy, skulls, herbarium specimens) (if possible)
  • visualisation with models (if possible)
  • multisensory experiences including smell and taste (if possible)

EVALUATION & RESUME
Investigations on the effect of the 5-min-biology (HENSE et al., in prep) reveal a high impact on students’ species knowledge. Both visual and acoustic recognition of species are significantly enhanced.

After attending a 5-min-biology sequence of 14 units, university students report an increased and sustained interest in birds and their songs in particular. The awareness of birds in their everyday life grew distinctly.

The use of this simple method is highly recommended to any biology teacher or lecturer to prevent further decline in species knowledge in students as well as society in general.

REFERENCES

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EXAMPLE OF A 5-MIN-BIOLOGY ON COMMON BIRDS
Conducted in a regular university seminar presenting the following species:

1. Common chiffchaff
   Phylloscopus collybita
2. Common chaffinch
   Fringilla coelebs
3. Short-toed treecreeper
   Certhia brachydactyla
4. Great tit
   Parus major
5. Blue tit
   Parus caeruleus
6. Eurasian nuthatch
   Sitta europaea
7. Great spotted woodpecker
   Dendrocopus major
8. Common firecrest
   Regulus ignicapillus
9. Common redstart
   Phoenicurus phoenicurus
10. Song thrush
    Turdus philomelos
11. Blackbird
    Turdus merula
12. Eurasian blackcap
    Sylvia atricapilla
13. European robin
    Erithacus rubecula
14. Dunnock
    Prunella modularis

REPEITION OF PREVIOUS SPECIES & SELF-EVALUATION

PRESENTATION OF NEW SPECIES

NAME

SOUND EXAMPLES WITH PHONETICS & MNEMONICS

FIRST HAND EXPERIENCE: ORIGINAL SKULL OF A WOODPECKER

SHORT VIDEO CLIP COMBINING AUDITIVE AND VISUAL IMPRESSIONS

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