

Environmental Education: Which Kind of Knowledge Provides highest Consolidation Rates?

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Introduction

Environmental knowledge influences conservation behavior (e.g. Frick, Kaiser, & Wilson, 2004; Kaiser & Fuhrer, 2003). Frick et al. (2004) pointed to three different knowledge forms: System knowledge, action-related knowledge, and effectiveness knowledge, whereof just the latter two were found to influence conservation behavior. The long-term effect of environmental education on these three knowledge forms has not yet been investigated. Action-related knowledge appears to be the most behavior-proximal. Hence our goal was to examine if students' show a higher memory consolidation rate for action-related, than for system and effectiveness knowledge after an environmental education programme.

Methods

Our analyses are based on data collected from 230 students aged 10.5 ± 1.1 . The participants of the 4-day comprehensive environmental education program on water at a German school youth hostel ($n=192$) were compared to a control group ($n=38$). We used pen-and-paper questionnaires as pre- (2 weeks before, T1), post- (directly after, T2), and retention tests (1 month after the program, T3). The ad-hoc multiple choice questions resembled those of Frick et al. (2004), and retrieved system ($n=10$), action-related ($n=8$) and effectiveness ($n=7$) knowledge. Like Frick, we revealed a relatively low reliability for the effectiveness knowledge scale.

Results

System and effectiveness knowledge showed a highly significant decrease from T2 to T3. However action-related knowledge had a high consolidation rate and was stable over the time-span of one month, $Z = -1.79$,

$p = 0.074$. The control group showed no knowledge change at all.

Discussion

We were able to confirm our assumption. The main finding of our study was the high consolidation rate of action-related knowledge. It did not decrease like system and effectiveness knowledge moreover remained constant for one month after the program. The behavior-proximal nature of action-related knowledge might lead to a stronger imprint on young students' memory. Knowledge about different action is important and already has to be available to know their effectiveness (Kaiser, Roczen, & Bogner, 2008). This can explain the decrease rate of the more complex effectiveness knowledge. Continuative results of our study also reveal that effectiveness knowledge shows the lowest increase rate of all forms after environmental education. From our findings, we can deduce therefore that the communication of effectiveness knowledge seems to be most important, as it also "appears to be a widely disregarded component of environmental knowledge" (Kaiser et al., 2008). This assumption could be addressed in future research.

References

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