Investigating Situational Interest and Learning of Biodiversity: A case study of students' experience of a visit to a nature reserve

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Abstract

This case study investigated the experiences of 13 students (13-15 years), from three Scout groups, who participated in a one and a half-hour guided tour to Ile aux Aigrettes nature reserve, Mauritius. It identified the factors that triggered Situational Interest (SI), what students learnt about biodiversity and how their learning relates to the triggers of SI. SI is the psychological state triggered by environmental stimuli that causes emotional arousal, directs the attention of an individual towards content and motivates the desire for further discovery. Hence, SI promotes learning. One cannot predict visitors' prior interest and knowledge of biodiversity as they enter a nature reserve. However, their SI may be triggered through factors that stimulate interest and ultimately enhance the learning of biodiversity regarded as a multi-dimensional complex concept.

The study was theoretically framed using the Contextual Model of Learning for studying informal learning experiences, the Four-Phase Model of Interest Development (FPMID) for interest development and the Human Constructivist (HC) and affective learning frameworks for conceptual change, based on the premise that learning is meaningful. Data collection consisted of field observation and pre- and post-visit interviews. Students also drew Personal Meaning Maps (PMM) about their conception of biodiversity before each interview. Visual data collection techniques such as auto-photography and photo-elicitation were introduced.

Exhibits such as the tortoises, bronze models of extinct animals and endemic plants and animals as well as biodiversity-related concepts were aspects of the tour that contributed to SI due to both affective and cognitive situational factors. The affective factors that triggered SI were strong emotional arousal, bodily experiences and aesthetic experiences felt by students. The cognitive factors comprised impressive information and size/numbers which contributed to learning. The novelty of the information and of the experiences appeared to be a critical trigger of SI as it was influenced by both affect and cognition. Furthermore, the factors that ignited SI were intricately linked. The study showed that interest can be triggered both towards the discontinuous event of exhibit encounters and the continuous events of the context of the visit, such that the triggering process was not a once-off event; rather interest was being triggered and maintained continually.

I proposed three lenses to analyse what students learnt about biodiversity namely: 'ecological literacy', 'biodiversity and society' and 'nature and self'. After the visit, students' understanding of the term biodiversity and the importance of conservation increased. There was also increased knowledge of extinct and endemic species. Similarly, students were better able to formulate relevant opinions about biodiversity and society issues and display emotional concern for nature. Collectively, students were more likely to deepen their existing

conceptions rather than making new conceptual additions. Most students remembered and understood incremental pieces of information rather than synthesizing information to gain a holistic picture. Individually all students exited the trip with more knowledge. However, the net gain in the new knowledge was independent of their prior knowledge. Thus, a student's ability to grasp and assimilate new information as a result of the tour remains limited, irrespective of prior knowledge. Students who had higher prior knowledge also had higher affective learning episodes as they found the learning material personally relevant and salient.

The study showed that weak forms of knowledge restructuring by incremental addition of knowledge were by far the most common form of learning. However, in some cases, they formed the basis for stronger knowledge restructuring which occurred less frequently. Independently, the affective triggers of SI resulted in superficial learning. Cognitive triggers of SI always led to more significant knowledge restructuring and co-occurred with affective learning episodes due to wonder, bodily experience or emotions as well as affective triggers of SI. Therefore, affect enriches cognition by co-occurring with cognitive triggers of SI which in turn leads to strong forms of knowledge restructuring.

This study provides evidence that learning in informal settings is not insignificant. Practitioners should aim to present new discrepant information that impresses and creates strong emotional arousal among visitors to promote learning through a strong restructuring of knowledge. I suggest a refinement of the FPMID to consider that one may move iteratively, instead of sequentially, from Triggered SI towards Maintained SI and the time factor may be as little as a one-hour intervention. I also propose that biodiversity education be modelled around three aspects: ecological literacy, society and emotional connectedness. Finally, I recommend that auto-photography and photo-elicitation could be further explored in informal learning studies and science education, to promote affect and cognition.

Keywords: Situational Interest, biodiversity education, Human Constructivism, affective learning, Four-Phase Model of Interest Development, informal learning, nature reserve, Mauritius