

AESTHETIC EXPERIENCES THROUGH FICTION: A CASE STUDY OF COLLABORATIVE DRAMA ACTIVITIES IN CHEMISTRY EDUCATION.

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Aesthetics experiences have a special role in education. These experiences are argued to stand out from the general stream of experience (Dewey, 1934/2005), expand perception (Pugh & Girod, 2007) and develop understanding of the coherence of parts (Girod, Rau & Schepige, 2003). While it is impossible to ascertain a significant experience for an individual, it is still a common practice in education to design learning environments that enable such experiences (Kolb & Kolb, 2012). One possibility to approach aesthetic experiences is through interplay between reality and fiction with drama. In our paper we explore the challenge of providing an aesthetic experiences by investigating how student teachers' design collaborative drama activities in chemistry education. Initial results imply that the experience in and of fiction is facilitated in subtle and intertwined ways including roles, actions and story-telling. The aim of this study is to supports the design of learning experiences and to develop understanding of the nature of aesthetic experience in education.

Keywords: Aesthetic experience, drama

INTRODUCTION

Aesthetics have a special role in education. The interest in aesthetic quality of a learning experience is rooted into the works of John Dewey (1934/2005), who argued that certain type of *an* experience is fulfilled or consummated and therefore marked off from general stream of experience. For Dewey the aesthetic experience involve intellect, practical action and emotion. Here, emotion is a cementing force which gives diverse things their qualitative unity; product is aesthetic only if it forms a perceptual whole (Leddy, 2016). In other words it is the experiences or events of everyday life a person shares to others due to feelings related to connection, coherence or maybe unity. The educational values of these aesthetic experience for science education has been conceptualized in different ways. Girod et al. (2003) have introduced the concept of aesthetic understanding, which implies to develop coherence of parts, ideas and concepts. Another example of an educational value is expansion of perception, which enables students to see themselves and act in the world differently (Pugh & Girod, 2007). While it is impossible to ascertain a significant experience for an individual, it is still a central practice in education to think about and design learning experiences for students (see e.g. Kolb & Kolb, 2012). Take for example non-formal and informal education, which aims to enrich learning experiences with both cognitive and affective impact (Eschach, 2007).

In our study, we draw from drama education to elaborate on the aesthetics of the experience. In essence, the power of drama is the possibility to pretend to be someone. This enables a special type of simultaneous experience, which has been conceptualized as *aesthetic doubling*. Aesthetic doubling refers to a *simultaneous* experience of being *in* a fiction (a person acting a role) and an experience *of* a fiction as audience for other participants (Szatkowski, 1985). Therefore, the designs of drama should at least i) create and sustain fiction and ii) form a perceptual whole between the experience and action in order to enable aesthetic experiences. The design of fiction is not a simple task as the success of drama depends on teacher's skills, engagement and the level of trust in the group (Toivanen, Antikainen & Ruismäki, 2011).

In our study we explore how student teachers plan and implement collaborative drama activities and by doing so try to enable aesthetic experience for students. Two research questions guide the analysis:

- How do drama activities designed by student teachers create and sustain fiction?
- What are the key characteristics this type of fiction that enables aesthetic experiences?

The aim of this study is to support the design of learning experiences e.g. in the domain of non-formal education and to contribute to understanding of aesthetic experience in general

METHOD

To answer the research questions a case study (Yin, 2014) was conducted for student teachers' drama activity designs (N=8). The student teachers were introduced to drama in science education, after which they designed and implemented a drama activity for a group of students that came to the university to do inquiry activities in chemistry lab. Student teachers created a video where they illustrated the drama activity for drama instructors to get feedback from their ideas. The groups also created text material that complemented their design and was often used directly during the drama. Both the video and the written material were analyzed with inductive content analysis (Mayring, 2014). A case where student teachers told a story, which students performed was selected as representative, because there science ideas were represented through fiction. A class of high school students (N=17) took part into the activity. The implementation was observed by the researchers.

RESULTS

An activity where students act out a science story of whisking an egg. The story illustrates how whisking causes protein-chains (that are surrounded by water and arranged so that hydrophobic amino acids are facing inwards) to denature enabling air bubbles to enter the structure stabilizing the hydrophobic parts. Denatured protein-chains bind and form a egg white foam. In the video student teachers tell that the purpose of the activity is to introduce concepts, wake-up sleepy students and improve team spirit.

In the beginning of the activity student teachers introduce themselves and start sharing the roles student are going to play in fiction (a whisk, air bubbles, hydrophobic and hydrophilic amino acids, and water molecules) to the students. Student teachers gave tips of how these roles might act in a fiction for example "air bubbles make a whistling sound" and "hydrophobic amino acids repel water".

Before starting the story student teacher ask students to improvise actions or a performance as they hear their character mentioned. In the written plan roles were expressed in italic and some key words were bolded so that the reader of the story would emphasize them and by doing so give a cue of what could be acted, such as "...*amino acids* have binded with **strong** peptide bonds...". During the implementation this was observed to cause students to change from holding hands to elbow locks. In the beginning students were hesitant, and student teachers stepped in to suggest an action to maintain the pace of the activity. However, after that students came up with their own interpretations of their roles and the actions and were observed to be engaged with the activity.

CONCLUSION AND DISCUSSION

This case represents a drama strategy (Toivanen et al., 2011) where participants act a science related story. In the activity students do not only perform collaborative action, but also illustrate scientific ideas through fiction. Collaborative action links to fiction forming a perceptual whole. This type of unity is required for aesthetic quality to the experience (Dewey, 1934/2005). Initial analysis of the drama activity demonstrates multiple features that supports this simultaneous experiences *in* and *of* fiction, or aesthetic doubling (Szatkowski, 1985). The experience *in* fiction was supported by development of roles, encouragement to improvise and demonstration. The simultaneous experience *of* fiction is facilitated by seeing other participants to act their roles and also by the storytelling. The experience *in* and *of* fiction intertwine in this process as an act in a role encourages others to (re)act. These subsequent actions create a scenes that contribute the experience of fiction.

This is an exemplary case of how fiction is created and sustained to enable aesthetic experiences. The next phase is to map more cases in order to understand more specifically what the key characteristics that enable

aesthetic experiences are. In spring these activities are tested with students with enables further data gathering and data triangulation (Yin, 2014) with interviews of participants and student teachers.

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