Animation: children, autism and new possibilities for learning

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Abstract

Purpose:

Our aim is to discover whether and to what extent children with autism can find the production of animations useful for their learning and self-experience. In this study we seek to understand how our participants produce animations and what implications this has had for their learning abilities and social interaction skills.

Design/methodology/approach:

Through a mixed methods approach, but with participant observation as paramount, we worked with two children identified as being on the autistic spectrum to document their understanding and use of animation as a tool for concept development and for narrative and meaning-making.

Findings:

The project showed that the two participants in question gained greater learner autonomy through their involvement in animation. Teachers also reported that they understood more about the two students than had previously been the case. One participant has become much more actively involved in learning processes than before and sees herself in a new way, mainly because her anxiety has been reduced; the other participant has learned much about the component parts of a narrative sequence and is now able to assemble these more effectively.

Originality/value:

The greatest benefit of animation in the classroom comes from young people becoming producers of it rather than merely consumers. Being able to express themselves through movement opens the possibility of understanding and interpreting emotions, moods and situations in a way that is of great benefit. Our case study suggests that being actively involved in the production of an animated story is particularly beneficial for children's emotional, social and verbal development. Combining experienced reality with bodily expressions and subsequently with verbal language is difficult for most children with autism. Creating animated stories can be a useful stepping stone to enable children to transform experienced reality into words. The outcomes described in this paper are essentially linked to the nature of the production task and could not have been achieved through passive absorption of animation.

Keywords: producing animation; movement as a form of expression; self-determination; learner autonomy

Introduction and methodology

As part of the EU-funded Animated Learning project [ref here to online version of Teacher Guide], and using understanding and pedagogies developed in an earlier project [ref here to Animated Science], animators, teachers and others in education worked in a number of different settings in Denmark, Estonia and UK to explore the affordances of animation for learning, especially in settings involving children who learn differently, are disaffected or are excluded to some extent by reason of disability or impairment. In the case study reported on here, the setting was a Danish school for children identified with autism. In this paper we explore the potential benefits of engaging children with autism in the production of their own animation films. Two children of 12 and 13 years were given the opportunity to make short animation films. With only minimal support from a professional animator and a psychologist. The children produced a number of short animated films, taking charge of the development of storyline and characters as well as the practical production of the films.

The setting for our research is the classroom, and we aim to develop pedagogical approaches that build on existing knowledge about what is effective for learning to take place. We take our lead for involving the visual in teaching from well-established symbol and image based approaches such as TEACCH (Schopler, 1995). We also draw upon understandings of the educational advantages of storytelling, which argue that complicated issues are more easily understood if they are told as stories, and that social stories enable learners to enter into dialogue (Gray, 1994a; Gray 1994b; Howley and Arnold 2008). Finally we are indebted to cognitive psychology, especially the work of Metner and Storgård (2008) and their development of the KRAP (acronym based on the Danish for cognitive, resource-focussed, appreciative pedagogy) approach (Dafolo, 2008).

We aim to combine this well-documented pedagogical knowledge in the field of autism with knowledge and experience from the Animation Workshop (www.animwork.dk) and with other key research findings related to animation production (Lowe & Schnotz, 2008). In the wider context of animation and learning we note that animation has been shown to contribute to an understanding of narrative and story conventions (Abbott 1990; Lachs 1999; Marsh 2006). This understanding may be at the level of simple sequencing or it could be more complex and linked to higher order understandings. Abbott (1990) demonstrated the ability of young children to predict animated narrative, based on their knowledge of the genre involved. Lachs (1999) and Marsh (2006) investigated children as animators, and examined the conceptual challenges of narrative within this medium. Research has also shown that animation can assist in the explanation and understanding of concepts encountered by learners (Lachs, 1999; Loveless & Ellis 2001; Yandell, 2004; Marsh 2006). Within this area of research, some, such as Yandell (2004), have focussed on the affordances of animation and the ways in which the intertextual understandings of young children can be used to approach new narratives. Marsh (2006), working with much younger children, noted the ways by which access to animation could scaffold learning of new concepts. Others have chosen to concentrate on the benefits of animation as a group task among a community of learners, and the key opportunities offered by technology-enhanced collaboration (Crook, 1990; Sefton-Green & Buckingham, 1998). The continuing increase in interest in the role of creativity within learning has led to considerable discussion of this area within the academic literature, as is shown by two recent literature reviews on the impact of creativity on well-being (McLellan, Galton, Steward & Page 2012) and new ways to assess progress in creativity (Spencer, Lucas & Claxton 2012).

Research questions and methodology

Our aim is to investigate whether major autism-related educational principles from TEACCH, social stories and KRAP can be applied to the use of animation, and whether the resulting activity can contribute to the pedagogical repertoire. Howley and Arnold (2008) describe in their book on uncovering the hidden social code how the comic conversation can be a visual teaching tool to show and teach a person with autism spectrum disorders how another person thinks (shown in a thought bubble) and how that person speaks (shown in a speech bubble). This comic conversation is an example of a pedagogical approach for work with people on the autism spectrum, internationally known as social stories.

Our assumption was and is that the animation medium enlivens the social histories, and also gives children opportunities to create these stories; and that these pedagogical tools could be applied to a range of powerful and

expressive possibilities. With animation as the medium it becomes possible to give movement to figures, people and objects, and social histories have a temporal progression. We also had a hypothesis that animation would be a good medium for autistic children to use to express themselves, since animation speaks to their strengths: attention to detail, good focus and concentration abilities and a need to control what will happen.

At the school, two pupils were chosen, Sofie and Christian, and they were to make animation films twice a week in one school year. The teacher who was to follow the pupils through the process was given an introductory course. To begin with, the two pupils started creating their own film. Working together on the storyline and characters went very well: through discussions they developed a rough storyline and subsequently developed the characters and the background. As Christian is keen on computers, he took the lead in the filming and Sofie turned out to be a talented artist and natural animator. We were very impressed with the pupils' inspirational skills and their ability to work together during the production of the first film and in the second one we also left the creative process largely to them. One extra task was added: the children were to take pictures of each other and use them in the film. They practiced getting the different facial expressions right, took pictures, cut out the faces and used them in the animation film - an exercise which was to some extent barrier-breaking for both of them.

There have been many projects in which participants have been identified as on the autism spectrum, for example Golan (2007), and Silver & Oakes (2001). In the project: “The transporters” Golan et al. designed a study to enhance emotion comprehension in children with autism spectrum conditions. The study showed that using animated vehicles with real emotional faces significantly improved the children’s emotional vocabulary and emotion recognition. (Golan, O. & Baron-Cohen, S. (2006)) The aspects that distinguish this project from, for example, the “transporters” project include the focus on the moving image; the creative nature of the process with students not passively looking upon animations but actively making their own animations; the key role of teamwork alongside self-determination; and that we aim to create a means of working which can be transferred into a more everyday experience.

We used a mix of methodologies including participant observation, pre- and post-tests, analysis of the affordances of animation tools, interviews and teacher notes and memos. Before and after the Animated Learning project, the two children were tested on their language level with TEMAS - the Tell Me A Story Test (Constantino, 1986) and their cognitive abilities were assessed by use of WISC (WISC, xxxx), the most frequently used test for identifying children's cognitive functions. This test was taken because one of the test parts is about the ability to tell stories, and we would like to see if the animation project had any influence on this. We also wanted to ensure that our educational work was done among typically developing children who were challenged by their autism-spectrum disorder and not a combination of autism and cognitive impairments.

Findings

Our two participants both gained new understandings from their involvement in the project, but in quite different ways. For Sofie, one of the main outcomes was a reduction of anxiety. Sofie was, when we got to know her, a very fearful person. She had difficulty sleeping at night, and she wept often when confronted with unfamiliar acts. She was very unsure of herself and her own abilities, and found it difficult to see any point in learning something new. A reduction of anxiety was noticed during the project most particularly by parents and siblings, but also by classmates and teachers.

The school psychologist, who knows Sofie very well, described her anxiety as rooted in her difficulties drawing a line between herself and the world surrounding her. Sofie was not able to rationally separate her inner thoughts and emotions from surrounding conditions and external events, or distinguishing between what involved her and what did not. In this conjunction of the world within and the world without, the inner and outer world, the animation medium holds a significant potential. Maybe this possibility of showing the inside world through outside figures is the core of animation? Scott McCloud is an animator who has written several books about comics and animation. In

the book: “Understanding comics – the invisible art” he argues that “through traditional realism the comics artist can portray the world without – and through the cartoon the world within.” (McCloud 1994, p.41). For instance, if you draw a mouth in order to show what a mouth looks like, you are portraying the outer world. But if you draw a mouth to express someone’s feelings – as you do in cartoons and animation – you just have to draw a line that trembles – and the reader/the spectator will recognize the sadness of the person.

In one of the films produced by Sofie and Christian, they created an accident: A moving car hits a man walking on the street. During the plodding animation process, Sofie was creating a girl who stands close by and watches the accident take place. At first, Sofie had great difficulties comprehending that lifting her hands towards her face was not an action directed towards averting the accident, which she had no chance of doing. Raising her hands to her face is a bodily expression for the anxiety overwhelming her as she watches the accident happen. Later on in the project, this became a distinct and frequent theme in Sofie's animations: creating bodily expressions for emotions and finding communicative expressions for the inner thoughts which arise from being a part of a reality full of activities.

Though it is beyond the scope of this case study to indicate any general insights about the anxiety-reducing potentials of making animation films, Sofie's developments does allow us to critically approach the question of whether being actively involved in making animation films might contribute to reducing anxiety in children with autism spectrum disorders. Our study shows that through working with animation and telling animated stories, Sofie was able to learn from experience in a way which she had not previously had the opportunity or been able to. And she learned how to distinguish herself from the world around her.

With regards to Sofie’s reading skills, another significant development has taken place. She has previously shown indications associated with dyslexia and has never had much desire to read, and even less to write. During the project she made some small measurable progress in formal reading competence. She is now reading more quickly - in 2011, she read 9 words in 10 seconds - one year later, she reads 14 words in 10 seconds – although this is still very slow compared to others of the same age. Accuracy rate in the reading text has increased from 87% to 93%, which is a small step forward. Sofie has not shown any improvement at spelling. Despite the formal skills improving only slightly, it is remarkable that Sofie's desire and motivation to read has been quite different. One of the most striking developments which can be observed in her everyday life is her readiness to learn. She has become more interested in learning, and now takes drawing lessons every week and has become engaged in practising her skills, which she previously thought to be meaningless. She now spends much of her time at home drawing in the garden.

As noted above, her anxiety has previously caused her to avoid unfamiliar situations, people or tasks. Now, when given story telling exercises, she makes up stories and articulates them much more freely than before, due both to improved linguistic abilities and reduced anxiety.

As mentioned above, Sofie and Christian were tested using a WHISC test, both before and after the animation project. We did not expect to see changes in test results based on the project and for Christian, our expectations were confirmed. For Sofie, however, the test results were markedly improved in the post project testing, improving her score from 109 to 127. The most plausible explanation for this is found in the reduction of anxiety described above. In the post project testing, Sofie was no longer overpowered by anxiety when faced with unusual tasks such as a test.

The most significant development that can be observed in Christian is that he has been able to focus on a story / narrative in an image. When he was retested after the animation project, he told stories with action and details and demonstrated ability to empathize with characters and immersing himself in the story. Christian has developed improved skills at telling stories and an enhanced ability to see things from another point of view when communicating. The Temas (Tell me a story) test observed significant changes. When he was asked to tell a story about the pictures of the TEMAS test before the animation project, he was only able to describe the objects in the image. He went through them all and said: “I see a woman, I see a bed, I see four children, I see a bicycle” etc. When

he was tested after the animation project, he told stories that were carefully sequenced and included dialogue and the effect of actions by others like the following example:

“But William's mum suddenly came out of the window and said while she pointed to the left: “William, will you please bring this to your cousin”. William grunted a bit. Er, “I would like to play with my friends!”, he said. William's mum sighed and shook her head: “Should I go get dad?” William didn't want her to get his dad. His dad sometimes got really angry. He didn't want that; especially not when his friends were there. “Okay then”. William stumbled to the read, stumbled onto the road, but he had his balance.

Throughout his years in school, Christian has been preoccupied with computer games which caused worry to both Christian’s parents and teachers, who saw his keen interest in computers and computer games as a desire to isolate himself and live in a fantasy world of his own creation. During the animation project, Christian’s most remarkable development was his keen participation in the corporation and interaction with Sofie. Early on, Christian took responsibility for the technical tasks requiring computer skills, but surprisingly to the teachers he also participated eagerly in making up and telling animated stories. His computer use has also changed and he is now more likely to choose social networking activities online rather than a more introspective activity. He now understands that technology can also be a means for communication.

Throughout the project, a significant development took place in both children as well as in their films, with the films produced towards the end of the project demonstrating a high level of empathy and understanding of emotions, social interaction and human movement. For both children, then, significant improvements were observed. The study suggests that using animation and involving children in the process of creating animation films holds great potential for teaching children with autism to understand personality traits, emotions and social interaction, as well as to develop their linguistic skills and reading ability. At the same time, we argue that not only does animation hold great potential in educational practice, it also gives teachers a new perspective on autism and an alternative tool to understand and appreciate the skills and potentials of children with autism, which are easily overlooked in teaching methods based on written text.

Implications and conclusion

This case study has explored the potentials of involving children with autism in making animation films and argued that there are learning potentials in using the animation media in order to teach children to ascribe emotions to figures and things. Animation gives objects character, objects are turned into persons and can show us what it takes to see or feel something, and this becomes a way of teaching children with autism to understand personality traits, emotions and social interaction.

When Sophie's anxiety has been reduced, it is our assessment that it has happened at least partly because she has discovered that there is a medium that helps her to understand how other people express their feelings and how she can express feelings herself - and tell other people exactly what she wants to tell them. A decisive factor is that animation is also a recognized medium that others will wish to view, so that products created are genuinely communicative; this has been crucial for the case-study and for Sofie and Christian.

The word autism stems from the Greek autos, meaning self, and thus indicates a condition of being in one's own self. With this in mind, we wish to emphasise that understanding autism ought to start from the understanding of the pupil with autism herself/himself. The last decades have seen developments in the use of animation in tests and as a diagnostic tool in detecting and describing autism (Klin, 2000). Our aim is a related but different one as we continue to explore the pedagogical potentials of animation with children being not only at the receiving end of animation film, but actively engaged in its production.

Our study also indicates that there is great potential in animation for teachers and special needs educationalists and their interactions with and understanding of children with autism. Observing and participating with the children in the film making process gives the educationalist a new media to understand their pupils with. When the teacher sees

the film and takes part in the process of creating the film, s/he is far better equipped to understand the world through the eyes of the pupil. And then the teacher can better discover how the educational interactions might begin and how they might develop.

The project has opened our eyes: we now see that in animation, we are offered an opportunity to understand and express ourselves which differs markedly from the spoken language of expression. The two children with autism spectrum disorders in our project have used the animation medium to capture and express their ideas in new ways and were able to experiment and learn storytelling skills in a concrete and pictorial way that they had not previously been seen. Movement, timing and perspective are essential ingredients in animation, and when you learn to deal with these, you learn something about what is most difficult for a person with autism disorders, namely to understand that the world looks different from your perspective than from mine, that your feelings are different than mine, and that emotions can be read in the characters' movements.

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