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Constructing entry points to knowledge

Increasing the appeal and improving the learning outcomes of educational programmes

A series of reception studies with primary school children shows how the appeal of the German educational programme *Knowledge makes you go Ah!* was increased, improving the learning outcomes at the same time.

In the IZI study “Knowledge and documentary programmes for children” we examined different programme formats in terms of their appeal for and educational success with primary school children. 300 children viewed 6 quality programmes and were interviewed individually immediately afterwards and 4 weeks later.¹ Among the programmes was the German broadcast *Knowledge makes you go Ah!* (WDR), a magazine programme with short humorous items which explain various aspects of everyday life and the connections between them. The study established that the programme was appealing in many ways and of sound educational benefit, but that there were also clear opportunities for improvement. In two follow-up studies the episode shown was deliber-

ately altered and re-tested, a successful example of collaboration between research and production practice.

When children kept looking away from the screen

When children are watching television, they are not necessarily always watching the screen filled with excitement. Nevertheless, in experimental situations, where children watch a programme as part of a study, visual attentiveness is a proven indicator of interest in the programme. As part of the series of studies on *Knowledge makes you go Ah!* visual attentiveness was measured using a device developed for this purpose – the “Look-O-Metre” – and processed graphically.² In the analysis it was thus possible to identify scenes which either captured the children’s attention or lost it altogether. In the case of *Knowledge makes you go Ah!* loss of attention typically occurred at the beginning of magazine items and, specifically, when there was a slow lead-in to the actual topic by way of incidental, general details. An example of this is the opening of an item on the earthworm and its eating habits.

The item begins with a long shot of the apartment house. Commentary: “This is Mr Wilms’ house. Mr Wilms is a worm breeder. And this is Mr Wilms.” Mr Wilms appears and is asked whether worms would eat the plate of sweets, ham, and sausage shown on the screen. Mr Wilms says no, and explains that worms’ favourite food is rotten fruit and vegetables. Whereupon he can be seen emptying a wheelbarrow at the compost heap. This is followed by close-ups of the earthworms in the compost.

This gentle opening is thoroughly delightful and amusing for adults, especially on account of the delicate irony of the voice-over. In the children’s groups we observed, however, the situation seems rather different. Several turn away from the screen looking bored; one boy comments spontaneously: “Great joke – get to the point!” It is not until activity and the compost heap appear on the screen that all the children are watching with full attention again. When the close-up of the rotten fruit and the worms is shown, expressions of disgust pass down the ranks. In the ensuing interview this item does not come off so well in comparison with



Screenshots from the item on earthworms as it was originally conceived

others in the same episode. It is hardly remembered, not cited as being particularly good or funny, and hardly any learning benefit or novelty value is perceived in it. From the children's perspective, therefore, it is an item of rather low quality.

Higher attentiveness and appeal if material children find boring is edited out

For our first follow-up study³ we edited the broadcast, removing the sections which lost the children's attention. In the case of the item about earthworms the opening was shortened, so that it began right away with the attention-grabbing scene at the compost heap. The test shows that the children remain noticeably more alert to what is happening and that their attention remains consistently high throughout the programme. To this extent, the item gains from the excision in terms of appeal for the children. It was better remembered, and twice as many children liked it. In response to the question about its learning benefit or novelty value, however, it lost almost half the children's votes.

Among other things, therefore, this study showed that attention and enjoyment are not necessarily accompanied by high quality in terms of educational benefit. Presumably, without its preliminary signposting and lead-in to the topic, the item afforded too few entry points for the acquisition of the content.

Improved learning outcomes through multimodal entry points

For the next step, the second follow-up study, the item was conceived completely afresh. Kersten Reich (University of Cologne, Germany) wrote a synopsis of the topic, drawing on his background in constructivist pedagogy and explorations with children and primary school pupils. Entry points for different types of learners (cf. Reich, Speck-Hamdan and Götz in this issue) were intentionally provided, and elaborated with a great deal of humour. The concept was then realised in the typical style of the programme by its editorial team. With this new "constructivist earthworm" item instead of the old worm breeder item, reception was once again tested using a similarly designed study (see following section).

The result was that the item was perceived as noticeably funnier and less boring, and during reception there was a great deal of laughter. Educational benefit and novelty value were also considerably enhanced in the children's opinion. To this extent, therefore, there was a considerable gain in quality in terms both of appeal and of learning outcomes.

Moreover, children's qualitative assessments of what they derived from the item once again indicate very strikingly how children differ in their choice of entry points.

Conclusion: magazine items demonstrate quality in terms of appeal and learning outcomes if they swiftly provide different entry points and an emotionally pleasurable approach to a topic.

"The Constructivist Earthworm"

"This is where Paul is going to move in. Paul is the pet Melle has been yearning for so excitedly. Or perhaps Paula, because Melle doesn't know whether it's going to be a male or a female." This is the beginning of the 3'36" item addressing the question: are earthworms really suitable as pets? We see a lovingly prepared hamster cage with exercise wheel, doll's bed, washbasin, toilet, and so on. "A week later: Melle is not at all happy with her new pet. Whenever she sends him to bed he obstinately refuses. And, oh yes, by the way it's Paul. An earthworm or, more precisely, a compost worm." We see a young woman trying to place an earthworm in the doll's bed or hamster's wheel. Since the latter, however, is obviously reluctant and repeatedly disappears along a wire into the neighbouring flowerpot, she becomes desperate. She asks someone who knows about these things: Professor Dr Dr Dr Jibbednit, as the sign on the door says. The latter brings out a big book which has answers to all of Melle's questions. "Can you keep an earthworm as a pet? How can you tell males from females? What do they eat?"

The professor explains that compost worms are hermaphrodites, that best of all they like feeding on organic waste, and that in the process they convert soil into richly nutritious humus. For their accommodation they prefer above all to be under the ground, because above it dangers such as "birds or children" lie in wait. The myth that a worm divided in two can survive is also explained. "If a bird bites a worm in half, only the top part – containing the heart, stomach, and brain – continues to live, unless it is precisely this part which the bird eats." The worm's stamping ground is also described: it can burrow up to 8 metres in depth and its burrows are up to 1 kilometre long. As the professor concludes: "So, you don't have to take it for walkies, that's already a good practical consideration! In prin-



Screenshots from the new "constructivist earthworm" item

ciple, therefore, it is quite possible to keep earthworms as pets; it is just that the accommodation needs to be suitably arranged." A week later, Paul moves into his new home, a box filled with compost. A pane of glass is fitted to the side. The voice-over comments: "You can wave to Paul through it – if you're lucky. Or you can bring in a few of Paul's friends from the garden and wait until they've reproduced themselves – this increases the probability that now and again you might actually get to see one of your pets face-to-face."

The new item in tests with the children

58 children between the ages of 6 and 10 (average age 7.6) saw this item as part of the *Knowledge makes you go Ah!* programme. After viewing, they were interviewed individually, and this was repeated once again after 4 weeks. As has already been described, in comparison with the previous version the item gained considerably in appeal, educational benefit, and memorability. Even after 1 month the children could still remember the content remarkably well and relate the storyline of the item. When doing so, they emphasise different points. Some enthusiastically describe the opening problem and the mistake of the "young woman" who had built him "a cage with bed and cushions" (Lucie, 9 years). For several, such as 7-year-old Luca, it was particularly important that the worm "had found a girlfriend", while Emma related several times that the central point was: "If the bird chops worms in two, the top half lives." The older children also mentioned the question with which the item began, for example Oskar (9 years): "With Paul the worm it was all about whether you could keep him as a pet."

In response to the question of what they found particularly funny, in addition to details such as the bed or toilet, children mentioned, above all, the basic story involving a girl who had false conceptions of an earthworm's needs. These are strong indicators that

precisely this kind of contextualising background story, which on the one hand is close to children, and on the other hand is told with absurd humour, is particularly appealing.

I thought that stuff with the worm was funny, the way she'd set up everything for him and he didn't want to go to bed. She kept putting him back in bed and he kept coming out and only later did she find out that he needs earth. That was when she went to a man who had an enormous dictionary, and he opened it and they both read about it. (Anna, 9 years)

The children also reported that in the 4 weeks between the interviews they had thought about the item. The question of what an earthworm needs and the story's basic dilemma occupied a central place in these thoughts: "Funny, because an earthworm as a pet isn't so practical" (Christoph, 7 years).

The item had a particularly great importance for children who are interested in earthworms. In most cases of this kind, the memory of the facts conveyed was correct. Only where the sex of earthworms was concerned had most children failed to understand that it could be both. This concept deviates too much from their present state of knowledge.

However, in addition to the gratifying learning outcomes, in the reception study it became clear once again how much the theoretical approach of the various learner types is reflected in the children's comments. These results clearly indicate that it pays to include more multimodal entry points from children's perspectives in the basic conception of a item.

Entry points via:

Facts and figures: "That the burrows are up to 8 m deep and that they can be 1 km long." (Charlie, 6 years)

Logical problems: "... that it [the worm] consists of different parts and that it moves with these." (Lennart, 8 years)

Relationships: "That first of all a girl wanted to have a pet and then she

had a worm, which she wanted to call Paul or Paula, and then she decided on Paul, because it was a man." (Christoph, 7 years)

Existential questions: "If a bird chops the worms in half, the top half lives on." (Emma, 7 years)

Moments of aesthetic experience: "They gave me the creeps the whole time, because the girl had the nerve to let them crawl all over her arm." (Julia, 7 years)

Narrative: "... a worm, but he doesn't feel at home in his new home, and she's also built a toilet for him and a washbasin and a bed, but he didn't like it and was always creeping out of bed..." (Annabelle, 9 years) ■

NOTES

1 Götz, Maya (2005). *Learning in knowledge and documentary programmes*. In: *TelevIZion*, vol. 18E, pp. 24-33.

2 The video recordings of the children were subsequently encoded with indications of how attentively the child was watching the television at intervals of one second. The value 3 was accorded when the child watched the screen, 4 when it displayed muscular tension, for example laughter, disgust, or commentary (high degree of attentiveness and involvement), 2 when the child turned its head away, and 1 when it turned its body away from the screen altogether (lack of attentiveness and involvement). The data obtained in this way were converted into a graph and displayed in parallel with the broadcast. This makes it possible to follow the course of visual attentiveness in parallel with the broadcast.

3 31 children viewed the newly edited item and were interviewed about it; the interview was then repeated after an interval of 4 weeks.

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