

Project Report

This three-part article describes aspects of the design, evaluation, and classroom use of the 'Natural Nashers' Dental Health Education materials. The first two parts ('The "Natural Nashers" programme' and 'Balancing the dental health messages') were prepared by Marilyn Clements, Raymond Croucher, and Anne Ita Rodgers, who are members of the HEC Dental Health Study at the University of Cambridge. The third part ('"Natural Nashers": a teacher's perspective') was written by Nick Martin, a teacher and Head of Department at the Grange School, Oldham, who has taught the programme for two years.

The 'Natural Nashers' programme

'Natural Nashers' is a programme of Dental Health Education developed by the Health Education Council Dental Health Study, for use by teachers with 13-14-year-olds in secondary schools. It is designed to be integrated into the normal biological sciences curriculum, using the equivalent of three 70-80-minute sessions over three weeks, although variations are possible. Each one involves:

1. A class experiment.
2. Information and discussion in the form of a key lesson based on a slide presentation.
3. Written work in the form of pupils' worksheets, at two levels of ability.

The class experiments are especially important, and are conducted, wherever possible, in friendship pairs, to encourage active learning and collaboration. They are:

- Week 1: Colouring and brushing teeth.
 Week 2: Recording the arrangement and health status of teeth.
 Week 3: Producing acid from sugar and plaque.

The programme is based on self-care, and develops an understanding of the distinction between prevention and cure. Emphasis is placed on discovering and developing skills the pupils already possess; in particular, the exercise of choice and personal decision-making is encouraged.

Pupils are made aware of the concept of plaque: how to see it (disclosing) and remove it (effective brushing), and its role in gum disease. The effect of sugar and plaque on the development of dental decay is also given special emphasis, stressing the importance of *frequency* rather than *quantity* of sugar consumption.

The main messages of the programme can be summarised as:

1. Restrict sugar-containing foods and drinks to mealtimes in order to prevent dental decay.
2. Clean the teeth and gums thoroughly every day with a fluoride toothpaste in order to prevent gum disease.

To encourage 'carry-over' into the home, each pupil receives a personal dental care kit and a diary of activities. Ideas for additional project work, possibly to be undertaken in other parts of the curriculum, are included.

Dissemination and support

'Natural Nashers' is disseminated through District Health Authorities by the District

Dental Officer. He or she is the programme manager, and appoints a Local Co-ordinator to carry out day-to-day organisation, liaison with schools and teachers, management of materials, and training of teachers and fieldworkers. Liaison with the Local Education Authority can be by a direct approach to schools, but is often achieved by the formation of an Advisory Group. This can have a mixed membership from all those with a relevant interest, such as Science Advisors, Health Education Officers, representatives from local schools, and keen and enthusiastic general dental practitioners. In this way, everyone is kept in touch, can assist with policy and organisation, and receive feedback on progress.

Rather than using dental personnel, the programme is taught by teachers, capitalising on their specific teaching skills and their insight into their pupils' special needs and characteristics. Also, as a group they are more numerous than dental health educators, and enable more pupils to participate in the programme.

Before teaching 'Natural Nashers', all teachers attend a training workshop which includes an update on dental health. After the programme, feedback from teachers is collected at debriefing sessions. Fieldworkers, responsible for assisting the teacher in the classroom and working with the pupils under their direction, are appointed by the District Dental Officer.

Although the programme has a structured format, it has been found to be adaptable to local needs and preferences and to a variety of teaching styles. During the last dissemination phase from 1981-84 the 'Natural Nashers' programme was used by 15 Health Districts in England and Wales, and by 2 Health Boards in Northern Ireland. New funding from the Health Education Council has provided for a further two-year phase of dissemination, and 83 more Health Districts have applied for a Starter Pack, which has been offered to help District Dental Officers to initiate the programme.

If you are interested, and wish to find out more about 'Natural Nashers', you

should contact your District Dental Officer to enquire if the programme is running, or will be running, in your Authority. Any other information can be obtained from: HEC Dental Health Study, University of Cambridge, Addenbrooke's Hospital, Trumpington Street, Cambridge CB2 1QE. (Telephone: 0223-63389.)

Balancing the dental health messages

This article will attempt to illuminate one of the issues which has emerged from the current evaluation of 'Natural Nashers'. This relates to the messages used in the programme and their impact upon the programme's recipients, 13-14-year-olds.

'Natural Nashers' reflects current dental health messages, published by the HEC in a document called *The Scientific Basis of Dental Health Education*. This document contains clear and unambiguous guidance for all dental health educators. The messages were designed specifically for 13- and 14-year-olds, and adapted as follows:

1. To prevent *gum disease*, remove plaque from teeth by brushing. Disclose plaque to ensure effective removal.
2. To prevent *dental decay*, limit the frequency of sugary snacks in between meals: i.e., choose safe sugar-free snacks. (A popular misconception is that brushing your teeth after a sugar intake will prevent dental decay. There is no conclusive scientific evidence to support this view.)

As evaluators of the project, we wanted to check the impact of the messages on the pupils' understanding and attitudes towards the prevention of dental disease. Data was collected from three sources: pupils, parents and teachers, using differ-

ent types of questionnaires. A self-complete questionnaire was filled in by 3,000 pupils before and after taking part in 'Natural Nashers'. We interviewed 73 parents in their homes after their children had been taught the programme, and the views of 106 teachers were collected using a self-complete questionnaire.

Pupils' responses

Pupils were asked to indicate their agreement or disagreement with the following three statements:

Brushing my teeth every day will prevent tooth decay in the next 12 months.

- (a) uncertain
- (b) disagree
- (c) strongly disagree
- (d) strongly agree
- (e) agree

Not eating sugary snacks between meals will prevent tooth decay in the next 12 months.

- (a) strongly agree
- (b) agree
- (c) uncertain
- (d) disagree
- (e) strongly disagree

Brushing my teeth every day will prevent gum disease in the next 12 months.

- (a) uncertain
- (b) disagree
- (c) strongly disagree
- (d) strongly agree
- (e) agree

It was anticipated that the post-test pupils would be able to identify the difference between the role of sugar in decay and the role of plaque in gum disease. We expected a shift away from agreement in the first attitude statement to disagreement. However, the post-test responses showed no change in this attitude. Instead, another change occurred: a significantly higher proportion of the study group at the post-test believed that not eating sugary snacks between meals would prevent decay. It would appear that rather than substituting one belief for another, an extra one was added.

What parents knew about 'Natural Nashers'

A separate study was undertaken to ascertain the impact of 'Natural Nashers' upon the families of adolescents receiving the programme. Two groups of parents were interviewed: the first group of 35 parents had a child who had recently been taught the programme, while the children of the second group (totalling 38 parents) had had no involvement. Twenty-two parents from the first group reported that their family had received new dental information, compared with four in the second group. This new information related primarily to specific aspects of *toothbrushing*, such as using food dye to see plaque. There were no mentions of the dietary message. When asked to identify the source of the new information, 18 of the 35 parents in the first group identified their child who had recently been taught 'Natural Nashers'.

What teachers told us about 'Natural Nashers'

A questionnaire which sought their opinions about different aspects of the programme, how they felt about teaching it, and the response of their pupils, was returned by 106 teachers. They reported that:

1. Week 1 activities were enjoyed most by pupils and teachers. In this week a major topic is plaque and its removal.
2. Reservations were felt about the Week 3 experiment, which demonstrates that acid is produced when sugar comes into contact with plaque. Teachers thought pupils had responded less well to this week. Its central theme is the place of sugar in the aetiology of dental decay.

Balancing the message

The data collected from these three sources suggest that whilst the sugar message is having some impact, it is being overshadowed by the brushing message and its associated activity of colouring and brushing. There are perhaps three possible reasons to explain this imbalance.

These are:

1. The order of the programme and its materials.
2. The workshop provided for teachers.
3. The feasibility for change in the adolescent diet.

The colouring and brushing component of the programme is taught first, and personal dental-care kits are distributed for use at home. It is possible to visualise parents and siblings being told about this part of the programme: the kit being demonstrated and siblings encouraged to colour and brush. In contrast, the subject of diet and its place in the prevention of dental decay forms the final part of the programme. Its impact may be smaller because the activities may not have the same perceived relevance as the dental-care kit. The enjoyment of developing existing toothbrushing skills in 'Natural Nashers' might blur the distinction between the two messages made by a careful teacher.

Part of the in-service preparation for teachers involves them completing a pre-workshop task. The object of the task is to encourage discussion of 'conventional wisdom' and to clarify the main messages of the 'Natural Nashers' programme. Teachers may have ideas and experiences about teeth and dental health which make it difficult for them to accept the current dental-health messages. A great variety of often conflicting dental health messages have been advocated in the past, such as brushing your teeth after every meal to prevent decay; and, however well intentioned, it may take time for some teachers to change their beliefs about preventing dental disease. Advice on messages is usually provided by members of the community dental staff during the workshop. They've already got them sorted out!

Influencing diet

The feasibility of changing the adolescent diet involves two issues. Firstly, only a small minority perceive the correct place of diet in their dental health. When asked by us what they do to look after their teeth many adolescents give one answer

only: "I brush them". The teachers responding to a question about decay by advising more brushing would perhaps reinforce this. Secondly, we have found that this age group tends to consume more snacks within the home than outside it. When at home, some consume what is readily available — in many cases what their parents have bought while shopping. It is therefore important to recognise that the food we eat reflects more than its nutritional value: it has a social and cultural dimension beyond that.

This does not diminish the importance of taking up opportunities for health education on diet. It suggests the need for inventive strategies which, perhaps, include other members of the school staff and seek to involve families. The results we have described prevent us from having unrealistic expectations of one three-week programme in Biology. They also outline the challenge for teachers doing dental health education — once they've balanced their messages!

'Natural Nashers': a teacher's perspective

The first I heard of 'Natural Nashers' was just before Easter 1982, when I received a letter asking if the school was interested in taking part in a Dental Health Programme. After talking it over with other members of the department, I decided to find out more.

We were then invited to attend a one-day course at the Teachers' Centre, where we were shown the course worksheets, slides, class experiment materials, and a video of 'Natural Nashers' being taught in one of the trial schools. We were also presented with an imposing folder entitled *Teachers' and Fieldworkers' Guide* (of which more later). I was then introduced

to our local co-ordinator, who asked for timetable details and the numbers of children in our 3rd-year forms. I was also asked to fix a starting date for the three-week course. I would have preferred to start in late September, but in the end settled for the week following the November half term.

Preparatory work

Back at school, my first problem was finding enough suitable rooms. Although planned as a six-form entry school, we have been oversubscribed for several years and there were eight forms in the new 3rd year. Of the two Biology laboratories only one had a blackout, so the Lecture Theatre and a Physics laboratory were pressed into service. At first the Lecture Theatre seemed a non-starter for a practical-based course, but in the end we coped by leaving empty rows to enable the fieldworker to distribute materials.

The next problem was the aforementioned *Teachers' and Fieldworkers' Guide*. In spite of good intentions, it did not become our everyday reading during the long summer holiday, and we were all too busy at the start of the new term to take in its many suggestions. Fortunately, in October, a Practical Workshop was organised in another school to familiarise us with the course. We were each provided with two co-operative 2nd-year pupils who acted as guinea pigs for the class experiments. My confidence in the colouring and brushing experiment was boosted by the second of my two subjects, who had a superb display of plaque and looked suitably shocked when he saw the extent of the problem in a mirror.

The week before the course started, we met our fieldworkers, who came to deliver the course materials and extra audio-visual equipment. By now we were all studying our guides in earnest, and devised our own ways of presenting the course. The two most experienced members of the department simply ignored the script and talked about the slides, while the Head of Physics, roped in to teach one of the remedial classes, ignored the slides and relied on the experiments

and worksheets to put the main points across. My approach was to read through the script and underline the main points in pencil and then use the slides to jog my memory. I was teaching each lesson three times a week, and found that after the first time I no longer needed the guide.

Teaching 'Natural Nashers'

In the first week's experiment, I found that the best way to break the ice was to demonstrate by dyeing my own teeth. I also showed how easy it was to brush the dye off. So far no one has refused to take part in the experiment. Our school has a strong drama tradition, and I was able to use this to stress the importance of teeth in 'looking good'. The quickest way to look like a seedy character is to black out a few teeth. I found that many children regarded losing one's natural teeth as inevitable, but the slides of Ancient Egyptian skulls contained in the materials showed them that this hasn't always been the case.

In week 2 the demonstration of teeth sets went down very well, but unfortunately we were supplied with the teeth 'in situ', so I had to press-gang my own children to help pull them out. After that I always made sure that each class removed the teeth ready for the next lesson. The slides in week 2 made me realise the importance of gum disease in tooth loss, and I understood the term 'long in the tooth' for the first time.

In week 3 there were problems with the experiment comparing the action of

Write to
Forum

plaque on sugar and saccharin. Our saccharin sample persistently gave an acid reaction which we cured by adding a small amount of sodium bicarbonate. The following year this experiment was changed, to omit the saccharin.

How 'Natural Nashers' was received

Week 1 definitely made the most impact, and all the pupils were delighted with their home care kits. Week 2 was also very well received. The sets of plastic teeth were very popular, and many of the pupils wanted to buy them. In week 3 the novelty was beginning to wear off. By now the children were getting to know and appreciate their fieldworker, but we all felt that some more dramatic slides or experiment to recapture the initial enthusiasm wouldn't come amiss.

I was pleased to see how well the Home Activities Diaries were completed, especially by children whose response to normal Biology homework is less than enthusiastic.

For two years, children in this school have enjoyed 'Natural Nashers', and have all felt that it was worthwhile. Following its introduction the school has stopped selling biscuits at break and changed to crisps, which are a safer snack for teeth, although, because of their high fat content, they cannot be considered as healthy as other dentally-safe snacks. A child eating crisps at break time and consuming a modern school lunch may be eating too much fat.

After 'Natural Nashers', I still find some 4th and 5th-year pupils eating sweets between meals. They know that this harms their teeth, but counter by saying that they brush their teeth better now, which is *not* a message of the course!

The teachers in this school are firmly behind 'Natural Nashers', although some feel that a two-week course would be better, and at least one would like a freer hand as regards course content. Personally, I would like to see similar courses and back-up materials being devised for teaching other areas of the Health Education curriculum, such as drug abuse and the prevention of cardiovascular disease.

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Details from the Health Education Consultant (E & H), B. Edsall & Co. Ltd, 124 Belgrave Road, London, SW1V 2BL.

