

Annette Ferri MSc. Dip.HE. is a Home Economics Teacher and Ed.D. student in the Faculty of Education, University of Strathclyde, Glasgow.

## Annette Ferri

# Food education: Bridging the gap between theory and practice

The quality of food provision in Scottish schools has improved but obesity and other diet-related illnesses are still on the increase. This paper describes some of the existing barriers that prevent food education becoming part of the core curriculum and looks at possible solutions.

It has been assumed that youth is the healthiest period in the life-course (HEBS, 2003). However, statistics show that young people in Britain are anything but healthy. Studies consistently show that health factors such as overweight and obesity in children can have long-term personal and societal consequences (Bullen, 2004) resulting in low self-esteem, which in turn can have a negative effect on learning (Taitz, 1983), (Korsch, 1986).

Good eating habits affect not only how pupils feel, but also how they learn and achieve ('Hungry for Success', Scottish Executive, 2002). Poor eating habits in Scotland are conducive to poor health records which can lead to coronary heart disease, obesity and premature death.

An over-reliance on expensive, precooked convenience food has taken the place of home-cooked food using fresh ingredients. These convenience foods are often high in fat, sugar and salt and can include additives and preservatives, which could affect immediate and long-term health.

### Scottish diet

An examination of data on the Scottish diet (Blades, 2004) highlighted actions to improve information about diet and availability of "healthy choices" in over 300 initiatives across Scotland. These have failed to drastically improve this important area of concern regarding the eating habits of young people. Considerable differences were noted in the study concerning the diet of Scots compared to the rest of Britain: namely the percentage of meals eaten outside the home in fast food outlets and the tendency to use frying as a method of cooking (Blades, 2004).

Obesity is now considered to be a global epidemic. International data suggests that obesity already manifested in early life (BNF, 2004) is likely to track into adulthood. Many

studies argue that diet and physical activity patterns are two modifiable lifestyles that need to be influenced as soon as possible, targeting all and not just those who are already overweight.

### Confusion

It has also been stated that confusion exists among local professionals over the best way to tackle child obesity (Cole, 2006) while the government's plan to tackle the problem was "very complex and ambitious".

According to James (1998) the medical establishment finds it hard to believe that food and nutrition have much to do with public health. He states that one cannot generate a coherent strategy on health without including nutrition.

Food education in UK schools from an early age could be the key to tackling these increasing problems thus playing a more proactive role than they do at present (James, 1998).

The World Health Organisation recognises the introduction of Health Promoting Schools by 2007 will have a positive impact on the population as a whole.

### Complex and challenging

All of this appears to be very favourable with regard to the acknowledgement of the importance of these initiatives. However, the way in which this actually happens is a complex and challenging process (Backett-Milburn, Platt and Watson, 1998).

If the many initiatives, already in place, to improve the health of young people are to be truly successful, the gap between theory and practice must be bridged.

### Nutrition attainment and health

There has been increasing awareness of the important link between what children eat and how they learn.

Pre-natally a mother's diet and nutritional balance during pregnancy can have long-term effects on her child. Rizzio et al., (1997), found strong evidence that neuropsychological development is extremely sensitive to nutrition during early pregnancy. In particular, they found correlations between levels of fatty acids and glucose in the mother during pregnancy and their children's intellectual performance at seven and eleven years of age.

Many studies have looked at the effect of diet and nutrition on cognitive development. Dani, Burrill and Demming-Adams (2005), argue that nutrition has potent effects on brain function. This study concluded that nutrients such as protein, iron, iodine and breakfast consumption, all had an impact on a child's learning capability and behaviour. It appears that to develop optimal potential, it is vital that children are provided with nutritionally sound diets.

### Food education

There is therefore a need for food education at every stage in the curriculum to help raise an awareness of the type of food, which should be eaten pre-natally, and beyond.

Schools are witnessing a steep rise in the numbers of pupils diagnosed with dyslexia, dyspraxia and attention deficit hyperactivity disorder. Researchers now believe that this could be attributed to poor nutrition from conception onwards. Richardson (2006) claims that up to a quarter of the school age population had some sort of learning impairment that is probably caused by the lack of 'Omega 3' fatty acids in the diets of their parents and grandparents.

Many would argue that meeting dietary and nutritional requirements throughout childhood is essential for health, behaviour and full intellectual development. An inadequate diet may compromise learning

ability and affect behaviour (Dani, Burrill and Demming-Adams, 2005).

What is clear is the importance of food education at every stage of development to ensure good mental and physical health.

### Current position

The current position of initiatives designed to improve eating habits shows the Scottish Executive introducing a range of measures to improve children's health. Some mirror developments in the UK, others are unique to Scotland.

In an attempt to combat the rising rates of coronary heart disease and other diet related illnesses in Scotland, yet another major healthy eating campaign was launched in 2003 challenging Scots to change their diet, change their lives and help change Scotland.

The main aim of this particular initiative was to provide funding to inform, educate and inspire people by giving them the necessary information to make changes.

In a previous health initiative, 'Hungry for Success' (Scottish Executive, 2002), significant progress has been made to improve the health of schoolchildren across Scotland.

Some recent studies show that, although knowledge of nutrition among schoolchildren appears to be generally sound, there is little evidence that the principles of healthy eating are being applied in practice (Seaman, Woods, and Gosset 1997).

### Making the connection

To ensure that food education is truly effective, the Executive must acknowledge that children need to make the connection between having a healthy diet and knowledge of food - where it comes from and how to prepare it.

Education Minister, Alan Johnston, (DFES, 2006) recently announced a new multi-million pound package to improve school food in England. These measures are designed to improve the nutritional standard of school food, and the cooking skills of the catering staff. The package also includes an entitlement to learn to cook, where every young person who wants to can learn basic cooking skills.

This measure is not far reaching enough, as it would provide food preparation skills to a limited number of pupils.

### Food education on the curriculum

In the UK, the House of Commons Health Select Committee (2004), identified education as a key factor in the development of good eating habits in children. It was seen as a way forward in the drive to tackle obesity and improve long term health (Bullen, 2004).

At present most schools in Scotland include Home Economics on the curriculum in the first two years of secondary schooling.

Pupils are taught Food and Nutrition as part of a wide reaching Technological mode. After second year the majority of schools offer this as an option at Standard Grade only.

In secondary schools in England and Wales food education is taught within Design and Technology. Food also forms part of the science and personal and social health curriculum. In food technology students study wider contexts, which includes industrial and commercial themes, related to food preparation.

As a result of these measures to improve school food the Government has asked the Qualifications and Curriculum Authority in England and Wales to consider how to put a greater emphasis on teaching pupils practical cooking skills in secondary schools for 11-14 year olds.

A new initiative about to be introduced into the Scottish Education System, "A Curriculum for Excellence" (Scottish Executive, 2006) is designed to streamline the curriculum and offer a structure for development and learning from 3-18 years. The focus is on enriching the learning experience for all pupils and incorporates a variety of purposes, values and principals. At the core of this initiative is the statement,

"Our aspiration for all children and for every young person is that they should be successful learners, confident individuals, responsible citizens and effective contributors to society and work" ("Curriculum for Excellence", Scottish Executive, 2006).

With this aim in mind, opportunities exist within this educational policy to change attitudes to health by offering essential food education within the core curriculum.

### "Fat time bomb"

The First Minister for Scotland, in an audience with young people in Edinburgh, commented on the growing rise in obesity figures. The Minister said that the "fat time bomb" could be defused by older people passing on home cooking skills to young people instead of relying on fast food (Gill, 2005). In the same newspaper article, Professor Hastings was of the opinion that obesity was caused by a variety of factors including a marked fall in cooking skills, the increase in parents working hours and the vast growth in the availability of cheap convenience foods (Gill, 2005).

However, the use of untrained personnel to teach food education would not address this important issue. Critics have argued that this approach could generate an ambiguity over where the responsibility lies for teaching food skills (Stitt, 1996). The use of untrained personnel could encourage pupils to perceive that food knowledge is to be found outside school instead of being part of the curriculum. Where do children get the opportunity to practice food preparation

skills within an educational background? If not in the home and not in school - then where?

### A global perspective

Information from many countries, (WHO - Health behaviour in school-aged children, 2004), shows how young people's behaviour and life circumstances influence their health.

Local Authorities run most schools in Sweden and Finland and today most school lunches are supplied free of charge at all levels in the school system. In an international perspective, Sweden, together with Finland, are unique in providing free school meals to all pupils. This has been the case since 1973.

Food education forms part of the core curriculum in most Swedish and Finnish schools. The role of Home Economics in schools in Sweden is clearly identified as having a significant part to play in improving health and food education within the school curriculum.

The aim of Home Economics curriculum in schools in Scotland is to teach pupils to apply the knowledge and understanding they gain about diet and healthy eating to practical food-preparation (Robertson, 1995). Since this statement was made Home Economics has become a technological subject with more emphasis being placed on commercial food production rather than basic food preparation skills (Stitt, 1996).

The proposed introduction of a "Curriculum for Excellence" (Scottish Executive, 2006), in schools in Scotland and a recent analysis of the school curriculum in Scotland showed that there will be a gap in food knowledge at secondary level.

### Potential barriers to including food education on the curriculum

School meal provision has improved to include healthy food and healthy eating messages ('Hungry for Success', Scottish Executive, 2003). This needs to be taken a step further by teaching children how to cook and prepare nutritious meals at home. The lack of these skills has resulted in a generation who lack the most basic of cooking skills (Winterman, 2006).

The inclusion of food education, which incorporates practical food preparation skills on the curriculum at every stage of a young person's education, has a political dimension. Politicians, not academics, decide priorities for education and the former may also be less receptive to including another subject on the curriculum if a great deal of funding is required to make the initiative work.

Another barrier could be failure on the part of experts to recognise that attitudes and behavioural changes must start with education. However, such forward planning, given the potential NHS savings

resulting from it, would be a cost effective means of preventing diet related illness. Education is the key to changing attitudes and behaviour in children.

Politicians will be less receptive to these changes since funding will have to be diverted from other initiatives.

### How do Scandinavian counties bridge the food education gap?

A comparative study into the eating habits of pupils in a school in Sweden and one in Scotland gives an insight into what children eat on a daily basis in both countries (Ferri, 2004). It was clear from the results that young people in the school in Scotland had a tendency to snack throughout the day on crisps, sweets and fizzy drinks high in fat, sugar and salt.

The secondary curriculum in both schools in Sweden and Scotland was also evaluated to establish whether or not it provided the knowledge and practical experience to enable pupils to make healthy food choices. The Swedish school included food education as part of the core curriculum for all year groups. Practical food preparation was seen as a life skill and therefore an essential part of a pupil's education.

In contrast, the school in Scotland included food preparation skills as a small part of Home Economics in the first two years of secondary education.

### Nordic lessons for Scotland to follow

#### Sweden

In most schools in Sweden, pupils are taught a curriculum, which includes lessons in core, subjects e.g. English, Maths and Science. Commendably another compulsory subject taught to all year groups are Domestic Subjects (Home Economics).

It was evident that a high level of commitment exists at all levels in the pursuit of good health (Ferri, 2004). This commitment is reflected in the welfare of the nation where health and well being are a top priority. This commitment to health has now become part of the culture of the country. Swedes expect good health care and good quality food.

In contrast, Scotland's poor health record has not improved significantly over the years in spite of the costly and varied initiatives introduced to improve health targets.

#### Iceland/Finland

In Iceland and Finland, as in Sweden, food skills and home economics are high-status subjects in the National Curriculum and in most schools are taught from the age of six onwards (Stitt, 1996).

Studies into eating habits of Finnish adolescents stated that the community, personal nutrition health attitudes,

knowledge and skills also shaped eating habits (Raiha, Tossavainen, and Turunen, 2005).

The Finnish/Swedish system of free school lunches and the integration of nutrition, health and education policies are a unique example of promoting healthy eating messages as part of the school experience (Dixey et al., 1999).

In contrast although the quality of food provision in Scottish schools appears to have improved, the take-up varies greatly within Scotland. Research (Garvie, 2002) highlighted the length of queues in school cafeterias, and the availability of local take away food as being a contributory factor. Thus many young people are eating food, which is often of poor nutritional value, and are high in fat, sugar and salt.

There are many reasons why the national diet is better in Nordic countries. One outstanding difference noted is that pupils throughout secondary education, are taught how to plan, cook and appreciation the aesthetic value of food as well as acquiring the necessary skills to be able prepare it (Ferri, 2004).

### Can these barriers be overcome in Scotland?

Making life changes necessary to improve the health of young people in Scotland is a challenge. Time is the biggest challenge of all in translating policy into practice in our schools.

The research has been done.

It is now time to link policy and practice by ensuring consistency in the approach to food and nutrition messages. It is not enough to provide good nutritious food in schools if pupils do not know how to cook and prepare it at home. A holistic approach to health, which incorporates these basic food preparation skills, must be part of the core curriculum in every school in Scotland. These practices must be embedded into an educational setting so that it becomes a natural part of life training for young people.

Food education, in its widest sense, must transcend healthy eating messages, provision of healthy food in schools and teaching theoretical nutrition. It must link these important messages to practical food preparation skills as part of the curriculum for every young person at every stage of their secondary school experience. Only by embedding these life-skills in an educational setting can politicians ensure that they become a natural part of the life of every young person irrespective of socio-economic status.

If the initiatives designed to improve the health of young people, which are already in place, are to be truly successful, the gap between theory and practice must be bridged. This is the sine qua non.

### Conclusions

The key objective of this paper is the

inclusion of food education nutrition and food preparation skills on the core-curriculum at every stage of secondary school education.

Highlighting how Nordic countries with good health records deliver food education in schools can only strengthen the case for a more realistic approach to developing these important life skills within an educational setting.

The evidence presented and the provision of a workable solution to the rise in diet-related illness in young people in Scotland must encourage the Scottish Executive to provide more funding to put these measures into practice in schools.

The way forward is to adopt a holistic or comprehensive approach to health, similar to Swedish schools, which incorporates basic food preparation skills, as part of the core curriculum in every school in Scotland (Ferri, 2004). These practices should be embedded into an educational setting so that it becomes a natural part of life training for young people.

The key to changing the attitudes and behaviour of children so that they can make informed decisions about the foods they eat is to expand Home Economics so that it becomes part of the core curriculum wherein extra time is devoted to food preparation skills for every year group in the secondary sector.

The prevention of diet-related illnesses allied to long-term economic benefits accruing from savings on the National Health Service are surely a convincing arguments for all would be politicians.

#### References

- Backett-Milburn, K., Platt, S. and Watson, J. (1998). Understanding the commissioning process: The background to effective health promotion research and practice. *Health Education Journal*, 57: 174-183.
- Blades. (2004). An examination of data on the Scottish diet. *Nutrition and Food Science*, 34 (6): 246-252.
- British Nutrition Foundation (2004). *Diet Through Life: Healthy Eating Guidelines for Schoolchildren*. Available from: <http://www.nutrition.org.uk> (accessed 2/11/2006).
- Bullen, K. (2004). Changing Children's Food and Health Concepts: A Challenge for Nutrition Education. *Education and Health*, 22 (4): 51-55.
- Cole, A. (2006). UK Government likely to miss its target to reduce childhood obesity. *British Medical Journal*, 332: 505.
- Dani, J., Burrill, C. and Demming-Adams, B. (2005). The Remarkable role of nutrition in learning and behaviour. *Nutrition and Food Science*, 35 (4): 258-263.
- DfES (2006). *Setting the standard for school food*. Education Secretary Alan Johnson Press statement. May 19th. [www.dfes.gov.uk/pns](http://www.dfes.gov.uk/pns) (accessed 02.11.06).
- Dixey, R., Heindl, I., Perez-Rodrigo, C., Snel, J. and Warnking, P. (1999). *Healthy eating for young people in Europe. A school-based nutrition guide*. The International Planning Committee of European Network of Health Promoting Schools. <http://www.euro.who.int/document/e69846.pdf> (accessed February 2005)
- Ferri, A. (2004). *An Investigation into the Eating Habits of Groups of Schoolchildren in Scotland and Sweden: A*

*Comparative Study*. University of Strathclyde.

Garvie, F. (2002). *Even the tatties have batter*. Publication: Free nutritious meals for all children in Scotland. Child Poverty Action Group, Glasgow.

Gill, K. (2005). Use gran's home cooking to cut teenage obesity. *Daily Express Newspaper interview*. Thursday 22nd September 2005.

Health Education Board for Scotland (HEBS). *The Health of Young People in Scotland: Quantitative dimensions*. Available from: [www.hebs.scot.nhs.uk/services/pubs/pubfulltext](http://www.hebs.scot.nhs.uk/services/pubs/pubfulltext) (Last accessed 5/12/2003).

James, P. (1998). Food is a public health issue. *British Medical Journal*. 332: 505.

Korsch, B. (1986). Childhood Obesity. *Jnl. Pediatrics*. 109: 299-300.

NHS Health Scotland (1996-2005). *Scottish Diet Action Plan Review*. Points 25, 26, 27.

O'Neil, M. (2006). *Making a meal of health*. Teaching Scotland pp.17. G.T.C. Scotland Edinburgh.

Raiha, T., Tossavainen, K. and Turunen, H. (2006). Adolescents' nutrition health issues: opinions of Finnish seventh-graders. *Health Education*. 106(2): 114-132.

Richardson, A., Puri, B. (2006). *Diet Behaviour and the Junk Food Generation: Lessons for Education*. Course notes. Edinburgh.

Rizzio, T., Metzger, B., Dooley, S. and Cho, N. (1997). Early Malnutrition and Child Neurobehavioral Development: insights from the study of children of diabetic mothers. *Child Development*. 68 (1): 26-38.

Robertson, M. (1995). *Home Economics News*. H.M.I Scottish Office, Edinburgh.

Seaman, C., Woods, M. and Grosset, E. (1997). Attitudes to healthy eating among Scottish school children. *Health Education* 97 (1): 9-15.

Scottish Executive (2002). *Hungry for Success*, Edinburgh, HMSO.

Scottish Executive (2006). *Curriculum for Excellence*, Edinburgh, HMSO.

Stitt, S. (1996). An International perspective on food and cooking skills in education. *British Food Journal* 98 (10): 27-34.

Taitz, L. (1983). *The Obese Child*. Blackwell Scientific Publications, Oxford, Mass., pp 21-232, 121-126, 243-244.

The House of Commons Health Select Committee (2004). *Obesity*. Third Report of Session 2003-2004. London: The Stationary Office.

Winterman, D. (2006). *Please sir, we want more*. BBC News Magazine. <http://news.bbc.co.uk/1/hi/magazine/4812968.stm> (accessed 02.11.06).

World Health Organisation (2004). Health behaviour in school-aged children (HBSC) study. <http://www.hbsc.org> (accessed 02.11.06).

## Recent Research: Young Children and... physical activity, obesity, the BMI, central fat mass, the Activitystat Hypothesis, diet and gym membership.

Research by Professor Reilly and colleagues<sup>1</sup> was published in October 2006. The study tested the hypothesis that a physical activity intervention would reduce body mass index. Over 500 children, with a mean age of 4.2 years, in 36 nursery schools in Glasgow took part over a 12 month period. The research design included an intervention and control group.

### The intervention group

The intervention group were involved in an enhanced physical activity programme in nursery school. This consisted of three 30 minute sessions a week over 24 weeks. The group also received home based health education aimed at increasing physical activity through play and reducing sedentary behaviours. Earlier research showed that pre-school children in Glasgow typically spend around 80% of their waking time sedentary, ie with no trunk movement, and less than 30 minutes per day in moderate-vigorous physical activity.<sup>2</sup>

### Conclusion

In relation to the October research, Professor Reilly and colleagues concluded that "physical activity can significantly improve motor skills but did not reduce body mass index in young children in this trial."

### Responses to the research

The study has generated a great deal of interest and concern about the body mass index (BMI) measurements used at six and twelve month intervals. The BMI is a simple measure using height and weight which is often used to assess a person's physique

based on that height and weight. However, while appearing simple, it can be misleading and, following publication, many words have been written.

Professors Green and Cable state, "Exercise studies in groups such as children, in whom somatic growth patterns are dynamic and variable in any case, require careful attention to changes in body composition, rather than simplistic measures of body weight or BMI. The point was illustrated to us in our own studies of supervised exercise training in obese children and adolescents. Like Reilly et al., we observed no differences in body weight or BMI between the exercise training and inactive control conditions. However, dual energy x-ray absorptiometry (DEXA) scans revealed significant decreases in central fat mass, which were not apparent in terms of change in body mass or BMI because of increases in lean body mass in the lower limbs across the training period."<sup>3</sup>

Professor Reilly then responded and supported his reasons for using the BMI, as an outcome measure, referring to the need to use BMI with children relative to reference data<sup>3</sup>

Professor Parker joined the debate and stated that, "... BMI does not measure fatness. BMI is a composite measure of weight for height which includes muscle as well as fat mass. It is entirely possible that the exercising children gained muscle mass and lost fat - ie became leaner and less obese, without any change in BMI...To determine whether an intervention is effective against obesity it is important to measure body fat. Using BMI as a surrogate measure of fat mass

can easily lead to the wrong conclusions."<sup>3</sup>

Professor Wilkin and colleagues suggested that it was important to consider the 'Activitystat Hypothesis' (activity of children follows a set-point that is individual to the child), "Reilly and colleagues hypothesised that an intervention of three thirty-minute sessions per week of enhanced physical activity would raise total activity. It did not, and the authors conclude that their intervention may not have been sufficiently intense. However, there is an alternative, possibly more compelling, explanation - that the physical activity of children is regulated internally by an 'activitystat', and not externally by opportunity."<sup>3</sup>

Dr Bossano stated that he was, "...grappling with the activitystat concept. It seems to me that children's activity levels must be distributed (normally) around a population mean (by definition)."<sup>3</sup>

Among other responses was one from Consultant Ian Rodd, "I commend the authors of this paper on their strategy - namely to try and look at an individual piece of the jigsaw that is obesity in a well constructed and conducted trial. Sadly, as everyone who has bought gym membership as a single intervention to lose weight would have told them, they were always on a losing wicket."

#### References

1. Reilly JJ, Kelly LA, Montgomery C et al. Physical activity to prevent obesity in young children: cluster randomised controlled trial. *Br Med J* (online 6th Oct. 2006) <http://www.bmj.com/cgi/rapidpdf/bmj.38979.623773.55v1.pdf>
2. Reilly JJ, Jackson DM, Montgomery C et al. Total energy expenditure and physical activity in young Scottish children. *Lancet* 2004; 363: 211-212.
3. <http://www.bmj.com/cgi/eletters/bmj.38979.623773.55v1?ehom>