

***Report of
The Working Group***



***on the Weight
of Schoolbags***

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Executive Summary

In recent years the weight of pupils' schoolbags has become a source of some concern to persons with an interest or involvement in aspects of education. This concern centres on the possibility that heavy schoolbags represent a health hazard to pupils whose spines are susceptible to injury during the formative years. In September 1997 the Minister for Education and Science, Micheál Martin, T.D., established a Working Group on this issue. This coincides with a number of projects on the weight of schoolbags being undertaken by pupils themselves, by the Irish Department of Health and Children and by Ministries of Education elsewhere.

It is possible that the integration of information and communication technologies into education may have a significant impact on the problem of heavy schoolbags in the medium to long term. However, in the interim, it is necessary that potential strategies should be investigated in order to alleviate the problem to whatever degree is possible.

Evidence to the Working Group suggests that many pupils carry schoolbags which weigh significantly in excess of 10% of body weight. A proportion of these pupils carry in excess of 20% of body weight.

Research available to the Working Group indicates that it is the pupils in the Junior Cycle who carry schoolbags which are heaviest in proportion to body weight.

Medical research indicates that carrying loads affects the carrier. The maximum load that does not produce adverse effects has not yet been identified. It is not possible, therefore, to prescribe safe limits for load carrying by children. There appears to be a consensus that 10% of body weight is reasonable for children to carry. Based on average weights for males and females, this provisionally suggested 10% level indicates a weight limit of 3.7 kg for 12 year-old students and a weight limit of 5.5 kg (females) and 6.2 kg (males) for 17 year-old students. This current recomm-

endation should be treated cautiously, given the dearth of research in this area. Factors such as local conditions, distance and time should also be considered in the context of load carrying by children.

A number of factors contribute to the increased bulk and weight which pupils must transport to school each day. These include the number of textbooks, workbooks and copies in use; the size and weight of individual textbooks, the use of multi-level textbooks containing two or three year programmes of study, the additional content and weight of the schoolbags. Factors which have an indirect influence on the weight of schoolbags are (a) the provision of storage facilities, (b) the lack of coordination of homework by teachers, (c) pupils' lack of organisational skills and (d) a lack of awareness by the school community of the possible health hazards posed by excessively heavy schoolbags.

Positive action has been taken by some schools in an effort to alleviate the problem of heavy schoolbags. At primary level, locally-based solutions are reported more frequently. Pupils attending many primary schools leave their books in school overnight and homework assignments are carefully monitored with the weight of schoolbags as a consideration. At second level, actions taken by some schools consist of a range of measures including the provision of lockers, the arrangement of the timetable into double class periods, active liaison with parents and the co-ordination of homework by subject teachers.

Solutions to the problem are multi-faceted and should be implemented in a cohesive manner in order to reduce the weight carried by pupils. Many of those solutions belong at local school level and are more amenable to implementation at primary level where pupils remain in one classroom with the same teacher to a great extent. At second level, pupil mobility and teacher subject specialisms require heightened levels of cooperation and

communication if the difficulty is to be ameliorated. The Department of Education and Science has a role in the heightening of awareness of the potential health hazard posed by excessively heavy schoolbags. The Department should issue a Circular, a Poster and an Information Booklet to schools, Colleges of Education, Education Centres and educational publishers and initiate a range of further actions as outlined in the Recommendations.

The Report concludes that scope for a major initiative in reducing the size and weight of textbooks exists and that this initiative is particularly important at second level. Educational publishers affirm that there is considerable demand from teachers for multi-level or omnibus textbooks which contain two or three-year courses of study. However, submissions made to the Working Group suggest that, when awareness is raised, teachers include the weight of textbooks among the many

factors which influence their choice of texts. The Report concludes, therefore, that there is considerable potential demand by teachers and parents for the provision of smaller, lighter textbooks, particularly at Junior Cycle level. In order to activate this demand it will be necessary for teachers to liaise with educational publishers and thus to influence the size and weight of textbooks through market forces. The Department's awareness-raising campaign should highlight the complementary roles of key members of the school community in achieving change in this matter. Guidelines for Publishers, issued by the Department, should also reflect the need to reduce the size and weight of textbooks.

The Working Group considered the cost implications of providing smaller, lighter textbooks and concluded that the estimated additional cost to parents would become relatively marginal when spread over three years.

Recommendations

The Department of Education and Science should:-

- initiate an awareness-raising campaign by issuing a Circular, Poster and Information Booklet to schools, Colleges of Education and Education Centres which would highlight:-
 - (a) the potential health hazard of heavy schoolbags
 - (b) the range of local measures which can be implemented in order to alleviate the problem
 - (c) the role of key personnel in the school community in promoting changes in textbook design
- provide copies of the Circular, Poster and Information Booklet for educational publishers and ensure that guidelines for publishers reflect the need to reduce the size and weight of textbooks
- continue to afford schools the option of book storage in the case of new second level schools (the Educational Research Centre report on primary school accommodation is awaited in this context.)
- examine the feasibility of providing for appropriate storage facilities in future specifications for furniture manufacturers
- raise with the NCCA the matter of including the issue of back care in Health Education Programmes at both primary and second level
- liaise with the Department of Health and Children in order to facilitate the distribution to schools of leaflets on lifting and carrying techniques and correct schoolbag design.

Schools should:

- create an awareness of the potential problem of heavy schoolbags throughout the school community and assess the problem within their own schools
- promote home/school co-operation on this issue
- liaise with publishers in order to activate a demand for smaller, lighter textbooks
- include a consideration of this issue when formulating homework policies
- have appropriate timetabling policies to take account of the need to reduce the size and weight of schoolbags
- advise pupils regarding organisation skills in relation to books and classes and encourage pupil responsibility for organising and managing their schoolbags
- monitor the weight of pupils' schoolbags at suitable intervals
- include correct lifting and carrying techniques as part of their health education programmes and encourage pupils to take responsibility for health and back care
- explore the feasibility of providing duplicate copies of textbooks and frequently used resource books.

Parents should:

- raise awareness of the potential health hazard of heavy schoolbags through the National Parents' Council and through local Parents' Association

- liaise with schools in adopting measures which alleviate the problem
- purchase the correct schoolbag design and encourage their children to carry their bags correctly and to avoid carrying unnecessary items.

Publishers should:

- include a consideration of weight of schoolbags in the design of textbooks and other student materials
- liaise with teachers in finding solutions to the problem including an exploration of the role of information and communications technologies in contributing a partial solution.

Introduction

In September 1997, the Minister for Education and Science, Michael Martin, T.D., established a Working Group on the Weight of Schoolbags. The Working Group's terms of reference were as follows:

To consider:-

- (i) the extent of the problem
- (ii) the factors which contribute to the problem; and
- (iii) possible implications of the problem, particularly for the health of pupils.

The Working Group was also asked to formulate proposals to alleviate the problem associated with the weight of schoolbags.

In recent years, the weight of pupils' schoolbags has become an increasing concern to persons with an interest or involvement in education at primary and second level. Parents, in particular, have given voice to this concern both as individuals and through their representative organisations. In addition, school authorities and teachers, health professionals and, indeed, pupils themselves have increasingly voiced their unease regarding the heavy loads which must be carried to and from school on a daily basis. Heavy schoolbags can be a burden which tire pupils unnecessarily. There is also the possibility that weighty schoolbags pose a potential health hazard to pupils whose spines are inherently susceptible to injury during the formative years. Although there is no evidence which links the weight of schoolbags to back strain, there is the possibility that they may be a contributory factor to strain which could have long-term effects.

The Working Group consisted of representatives of Teachers and Parents, a representative from the Irish Society of Chartered Physiotherapists and Department of Education and Science personnel. All of the Partners in Education were contacted and invited to make submissions. In addition, the Partners were invited to meet with the Working Group. The Irish Educational Publishers Association

(IEPA) was also asked to contribute its views on the matter and its representative participated in the Working Group meetings. The Working Group also held discussions with officials in the Department's Building Unit.

The Working Group adopted a multi-faceted approach to the investigation of the issues concerned and to the provision of a range of solutions. It addressed the potential role of pupils, parents, teachers, school authorities, publishers and the Department itself in the implementation of a range of preventative measures and of good practices which would alleviate the problem. The role of the Department of Health and Children, through its Health Promotion Units, was also noted.

The Working Group concluded that the timescale for the completion of the task did not permit conducting a large-scale survey on the issue, although such a survey would have been desirable. It did however conduct a survey on a sample of one hundred second level school principals and one hundred primary school principals. In choosing the schools, an effort was made to make the sample as representative as possible of all school types. Responses were received from 64 second level principals and 54 primary principals. The results of the survey have been integrated into the body of the Report. While the results cannot be considered as representative of the total population of school principals, they do offer useful insights.

In addition to the survey of principals, the Working Group received submissions from organisations representative of the Partners in Education, individual schools, parents, teachers, pupils and other interested groups. The Working Group would like to express its sincere thanks to the principals who took part in the survey and to all those who made submissions. The Working Group would also like to thank Mr. Hubert O'Mahony of the IEPA and Pádraig Mac Sitric, Divisional Inspector, for their contributions.

Membership of the Working Group was as follows:

Claire Breslin, Inspectorate, Department of Education and Science (Chairperson of the Working Group),

Henry Browne, Primary Administration, Department of Education and Science

Sara Dockrell, Lecturer in Physiotherapy, T.C.D., Irish Society of Chartered Physiotherapists,

Priscilla Fitzpatrick, National Parents Council - Primary

Rose Tully, National Parents Council - Post-primary

Oliver Hynes, Inspectorate, Department of Education and Science

Deirbhile Nic Craith, Irish National Teachers Organisation

Martine O' Riordan, Primary Administration, Department of Education and Science (Secretary to the Working Group).

The Working Group first met in October 1997, and presented its report in June 1998.

Heavy Schoolbags - Issues and Concerns

2.1 How widespread is concern ?

In considering its terms of reference, the Working Group first addressed the following question; how widespread is the concern among parents, pupils, teachers, school authorities and others about the weight of pupils' schoolbags ?

The National Parents' Council has reported widespread concern at the weight of schoolbags for some years. The Working Group was aware of research projects carried out by groups of pupils into the weight of schoolbags.

The Working Group was also aware of the concerns expressed by health professionals and the work of the Department of Health and Children, through its Health Promotion Units, in issuing awareness raising literature. The Working Group also noted increased media attention devoted to the issue, both in Ireland and elsewhere and the research work of the National Backpain Association in Britain.

Responses from the survey of school principals indicated that 94% of second level principals and 65% of primary principals were concerned about the weight of pupils' schoolbags. The Working Group accepted these responses as indicating a moderate level of concern on the issue. It is also possible that the Working Group's Questionnaire itself helped to raise the level of concern as many schools undertook to weigh pupils' schoolbags for the purposes of the survey.

In considering the evidence from these sources, it may be concluded that the weight of pupils' schoolbags is indeed a source of unease among those concerned with the health of pupils. A number of respondents in the Working Group Survey expressed relief that the issue was being addressed at national level and welcomed the initiative taken by the Minister in this regard.

2.2 Impact of Technology

In considering the need to investigate possible solutions to the problem of heavy schoolbags, the

Working Group examined the potential impact of the major changes in information handling which are having an increasing impact on the learning environment in both schools and society. In response to the challenges presented by the emerging global information society the Department has recently launched a major initiative, Schools IT 2000, which sets forth a national strategy for integrating information and communication technologies into education. Many pupils are already familiar with these technologies both at home and in school and as the objectives of Schools IT 2000 are achieved, pupils, teachers and parents will increasingly be exposed to a learning environment where information is stored, retrieved and handled electronically rather than in hard-copy. The environment which supports learning can be expected to continue to evolve and lead, to some extent at least, to the phenomenon of "the paperless school". In this context, and in the not too distant future it is reasonable to assume that:-

- computer work-stations, with networking facilities and multi-user capacity, will complement "chalk and talk" in interactive learning and involve a diminished need to have access to hard-copy information and for pupils' individual sets of school-books
- pupils will be able to use e-mail facilities to link home and school, allowing the concept of "homework" to continue to exist, but with less need for hard-copy reference material as in current textbooks.
- school textbooks will become available in CD-ROM format, accessible through multi-media computers.

It is likely, therefore, that the integration of information and communication technologies into learning and teaching may have some impact on the subject of this Report in the medium to long term. However, in the interim, the existence of concern on the issue of excessively heavy schoolbags demands that a range of practical solutions is investigated in order to alleviate the problem.

Weight of Schoolbags and Health Implications

3.1 Weight of Schoolbags

No large-scale research has been undertaken in Ireland into the weights of schoolbags carried by pupils. Nonetheless, some evidence is available from studies carried out by the paramedical profession and from a number of self-reported projects and investigations undertaken by schools, students and parents. These studies are described in the following paragraphs.

A. Casey & Dockrell (1996) carried out a study to investigate the weights of schoolbags that 10 year old children carry to school and to establish the ratio of child weight to bag weight. The study also aimed to relate the methods of carrying to the type of schoolbag and to the distance that the weights were carried. One hundred 10 year old subjects took part in the study which was conducted in two schools. Results indicated that:

- Pupils carried between 8.8% and 24.5% of body weight to school
- An average of 15.2 % of body weight was carried by pupils while 7% of them carried more than 20% of body weight
- A large proportion (38%) of pupils carried their schoolbags inefficiently.

The organisational and other policies of the schools involved in the above study are not known. However, the results indicated that there were wide variations in weights of schoolbags carried by pupils at one particular age level.

B. Research by the National Parents' Council - Primary provided the following data (Newsbrief, 1995)

Class level	Schoolbag Weight (kg)	Average (kg)
Junior/Senior Ints.	0.9 - 1.8	1.2
1st/2nd Class	1.8 - 6.4	4.1
3rd/4th Class	3.2 - 9.5	6.4
5th/6th Class	6.4 - 15.9	11.7

It is not known how representative this sample is of the overall population but it is noted that some schoolbag weights with the exception of those at Junior and Senior Infant level were in excess of 20% of body weight.

C. Laffan, McDonagh and McLoughlin (1998) carried out a survey involving 1,400 fellow students. Self-reports by those students in the survey population indicated that large numbers of second level pupils are carrying weights which are above 10% of body weight. It can be seen from the following data that Junior Cycle pupils carry proportionately heavier schoolbags than Senior Cycle pupils when the weight of schoolbags is calculated as a percentage of body weight and that females carried heavier schoolbags than males.

Pupils carrying more than 10% of body weight			
Senior Girls	87%	Junior Girls	69%
Senior Boys	67%	Junior Boys	57%

Pupils carrying more than 20% of body weight			
Senior Girls	49%	Junior Girls	38%
Senior Boys	30%	Junior Boys	24%

D. In Britain, the National Back Pain Association (NBPA) carried out a survey involving 761 pupils whose age ranged from 8 to 18 years. Results suggested that:

- 80% of school children surveyed carried badly designed bags or were wearing them incorrectly
- 11-12 year olds carried 12-13% of their body weight on average and in some cases weights of up to 25kg are reported (over 60% of their body weight)
- the risks were highest with younger secondary school children especially when carrying the extra items such as sports gear (a total weight which averaged 20% of their body weight).

E. A number of individual schools submitted data on the weight of pupils' schoolbags in the context of the Working Group Survey. It was not possible to tabulate this data in summary form. However, the evidence indicated that substantial numbers of pupils carry weights in excess of 10% of body weight.

In general, from the evidence available, the Working Group concludes that:-

- Many pupils in Ireland carry schoolbags which weigh significantly in excess of 10% of body weight. A proportion of pupils carry more than 20% of body weight.
- There is wide variation in weights of schoolbags at each class or year level.
- The proportional weight of schoolbags to body weight is greatest in the case of Junior Cycle pupils and especially in the case of females.

3.2 Health Implications

Certified absence for back pain represents the most common illness among people of working age

(Health and Safety Authority). Eighty per cent of adults will suffer from low back pain at some point in their lives. The National Back Pain Association reports (c.f. 3.1 D) that half of the children in their study suffer from some form of back discomfort by the age of 14 years. Studies on the prevalence of low back pain in adolescents claim that approximately 30% of adolescents have self-reported low back pain (Balague et al., 1988, Fairbank et al., 1984; Olsen et al., 1982). A study on a small sample of Irish adolescents (200 pupils) attending two schools found that 42% had self reported low back pain (Prendeville & Dockrell, 1998).

Little is known about the short or long term consequences of load carrying by children, given that most research in the area of carrying (manual handling) is related to work practices and therefore deals with adult populations. However, features that distinguish the normal paediatric spine from the normal adult spine are known. These include tissue differences, the capacity for growth and remodelling and a more malleable paediatric spine (Weinstein 1994). Many of the differences render the paediatric spine more vulnerable to external forces and therefore need to be considered in determining the effects of load carriage on children. Research has commenced in this regard but studies are scarce and population sizes are small.

There are two known studies that compare physiological parameters of different methods of carrying schoolbags (Malhotra & Sengupta, 1965; O'Regan & Dockrell, 1994). In both studies, while hand carriage was the least economical, the rucksack/backpack method proved to be the most economical in physiological terms. Similar research findings for adults indicate that hand carriage was the least economical method of carrying (Lind & McNicol, 1968). A further study (Pascoe et al., 1997) investigating the effects of carrying on the gait and posture of 11-13 year olds, found that bag carrying affects the normal gait pattern. The subjects carried 17% of their body weight and the research found that a one-strap bag promoted greater side bending of the trunk compared with a backpack worn over both shoulders. A backpack worn over both shoulders was shown to induce

greater forward lean of the trunk than a one-strap bag.

This was further demonstrated by Kennedy et al. (1997) in their study on the effects of carrying schoolbags on the posture of ten year old children. The subjects carried weights in a rucksack type schoolbag that were proportional to 5%, 10%, 15% and 20% of their own body weight. Results showed a significant forward lean of the trunk when subjects were carrying the schoolbag which became more exaggerated with increasing load magnitude.

The relationship between back pain in childhood and adulthood has not yet been established, but it is likely that some causative factors are common to both. Lifting and carrying are associated with adult back pain so perhaps they also contribute to back pain in childhood. However, this association has not been established.

3.3 Bodyweight/Bagweight Ratio: The Ten Percent Level

As outlined in the previous section it can be concluded that carrying a load affects the carrier. The maximum load that does not produce these effects has not yet been identified. Attempts to identify this are ongoing and there appears to be a consensus that it is reasonable for children to carry loads which represent 10% of their body weight. This current opinion should be treated cautiously given the dearth of research in the area. Factors such as conditions, distance and time over which the load must be carried and individuals' deviation from average body weight would also need to be considered prior to any recommendation of a safe load. Given that the effects of carrying increase with increasing load magnitude, it can be recommended that pupils carry only what is necessary, when necessary.

Average weights for males and females, 4 years to 18 years have been adapted from "Irish Clinical Growth Standards"*. These weights are set out below together with the 10% level for load carrying which is used in some of the literature:

Age	Average Weight	Schoolbag
(Males and Females)		
(Years)	(Kg)	(Kg)
4	16	1.6
5	18	1.8
6	20	2.0
7	22	2.2
8	25	2.5
9	27	2.7
10	30	3.0
11	33	3.3
12	37	3.7

Age	Females		Males	
	Av. Weight	S/bag	Av. Weight	S/bag
(Years)	(kg)	(kg)	(kg)	(kg)
13	44	4.4	40	4.0
14	48	4.8	46	4.6
15	52	5.2	53	5.3
16	54	5.4	59	5.9
17	55	5.5	62	6.2
18	56	5.6	63	6.3

*Average Weights adapted from Irish Clinical Growth Standards (Hoey, Tanner and Cox, 1986). Provisionally recommended limits for weight of schoolbags.

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3.4 The Health Promoting School

Health promotion in the school setting is a combination of health education and all the other measures and precautions that a school takes to protect and improve the health of those within it. In essence, the school which promotes healthy living is

one which integrates teaching and learning with action directed towards improving the environment of the school and family/community links. The subject of this report is a vital topic to be addressed by all those concerned with children's health and well-being. If preventative measures and good practices can be introduced now with regard to safe

carrying, it will not only help to protect children through their vulnerable growth spurts but will ensure that the high standards that they have experienced in their school-going years will be carried through to the workplace and elsewhere as adults.

Factors which affect Weight of Schoolbags

4.1 Direct Factors

In considering the factors which contribute to the excessive weight of schoolbags the Working Group collated evidence from the Questionnaire to Principals, from discussions with the representative of the IEPA and from the submissions received from other interested parties, including the contributions of Working Group members representing their organisations. A number of underlying factors emerged which contribute to the increased bulk and weight which pupils must transport to school on a daily basis. These factors are considered hereunder:

(i) The Number of Textbooks, Workbooks and Copies in Use

The results of the Working Group survey indicate that 85% of second level principals and 83% of primary principals consider that the number of books is a factor. Discussions with the IEPA representative support this finding. It is a recent development that primary level pupils now have textbooks or workbooks which are related to curricular areas such as music, science and health education. Many pupils, even at Infant level, use a variety of workbooks for various areas of the curriculum. There is also evidence from the aforementioned sources that there is an increase in the number of copies and folders used and some pupils use hardback copies which add to the overall weight.

Closely allied to this factor is the issue of curricular areas which pupils study at different stages and this will be discussed under a separate heading (c.f. 4.2(ii))

(ii) The Size and Weight of Individual Textbooks

The size and weight of textbooks was identified by 88% of second level principals and 54% of Primary Principals as contributing to the weight of pupils' schoolbags. It is evident that this issue is of increasing concern as pupils progress to second level schooling.

Evidence suggests that there has been a dramatic improvement in the quality of textbook production in recent years, coupled with an increased expectation of quality on the part of teachers, pupils and parents. Pupils accustomed to modern mass media expect their textbooks to be attractive and stimulating and these features aid motivation. A greater percentage of textbooks now contain full colour photographs, drawings and diagrams. For their part also, teachers are discerning in their choice of textbooks, demanding curriculum coverage, comprehensive worked examples and extensive exercises for classwork and homework.

(iii) Multi-Level Textbooks

The use of multi-level textbooks containing curriculum content for two or three years has become the standard style of production in many curricular areas at second level. Publishers report that both teachers and pupils favour this form of textbook production for its convenience and ease of access, particularly during pre-examination revision. A typical Junior Certificate textbook may contain over 500 pages and may weigh approximately 1.5kg. Textbooks in science, history, geography, business organisation, music and mathematics are frequently designed in this format. Many Leaving Certificate textbooks contain a two-year programme of studies and weigh approximately 0.8 kg.

(iv) Additional Content of Schoolbags

Other items add weight to pupils schoolbags. Lunches, flasks, bottles, heavy pencil cases, sports equipment, musical instruments, indoor shoes etc. must be carried to school. Younger pupils frequently include toys in their bags while many pupils may also carry heavy library books.

(v) Weight of Bag

The schoolbag itself may be constructed from heavy material such as leather which adds weight to the overall load.

4.2 Indirect Factors

A number of factors which have an indirect influence on the weight of schoolbags were also identified

(i) Storage Facilities

This issue of pupils' storage facilities was identified by 65% of second level principals and 74% of primary principals as a factor influencing the weight of pupils schoolbags. Many respondents at primary level also cited the lack of storage space in pupils' tables and mentioned the convenience of old-style dual desks which had storage facilities.

Discussions on this issue were held with personnel in the Department's Building Unit in order to ascertain what further information was available in relation to school storage facilities. It was ascertained that no comprehensive data on second level schools were currently available. However, it is understood that a computerised inventory of second level accommodation will be undertaken in the near future. The Building Unit has agreed that in compiling the inventory, issues such as storage and locker space will be addressed.

At primary level, self-reported data is available through the Building Unit's Primary Schools Accommodation Database. This information contains the level of satisfaction reported by schools on the availability of adequate free-standing storage furniture and 'strong rooms'. However, these data were not compiled with the specific issue of book storage in mind. Specifications for furniture manufacturers are also developed in this Unit of the Department. Recently the Department commissioned a study in order to investigate future needs in relation to Primary school buildings and facilities. This project is entitled "Research Project on National School Planning Data" and is being carried out in the Educational Research Centre.

(ii) The Curriculum

The issue of the number of curricular areas being studied by pupils was identified by a number of principals in the context of the survey. This issue

was of particular concern to second level principals who cited the number of subjects at Junior Certificate level as a factor influencing the weight of pupils schoolbags. Some respondents described a programme consisting of between 10 and 14 subjects.

(iii) School Organisation and Timetable Requirements

In many second level schools, students carry their bags from classroom to classroom throughout the day. In a survey of their fellow pupils for the Young Scientist Exhibition 1998, by Laffan, McDonagh and McLoughlin, 92% of senior girls and 93% of senior boys were found to lift their bags over 20 times a day.

Timetable requirements were cited by 33% of second level principals and 14% of primary principals in the Working Group survey as a factor influencing schoolbag weight. The survey results indicated that timetabling was more relevant at second level where students can have as many as ten different subject periods in the normal school day and attend for those in different classrooms.

(iv) Lack of Awareness

The personal perceptions of the members of the Working Group and general impressionistic evidence suggests that although many individuals are concerned, there may be widespread lack of awareness on the part of schools, parents and pupils themselves of the potential health hazards involved in carrying heavy schoolbags. While a very high percentage of respondents to the Survey indicated concern in relation to this issue, it is possible that the Questionnaire itself contributed to raising that awareness.

(v) Pupils' Organisational Skills

A number of principals at both school levels cited pupils' lack of organisational skills as a factor, particularly in regard to the early years at both primary and second levels. Evidence suggests that many pupils at both levels carry textbooks which are not immediately necessary to their requirements.



(vi) Homework Requirements and Co-ordination of Homework

Homework requirements were given a low rating by principals as a factor influencing weight of schoolbags (3% at Primary level and 20% at second level). Other evidence to the Working Group suggests that lack of homework policies generally and lack of co-ordination between subject teachers at second level may contribute to unnecessary overloading of pupils' schoolbags in some cases.

(vii) Lifting and Carrying Techniques

Pupils may employ incorrect lifting and carrying techniques, thus exacerbating the problem of heavy bags. While most pupils may own correctly-

designed schoolbags, many of those pupils subsequently carry their bags in an incorrect manner. Laffan, McDonagh and McLoughlin report that only 12% of senior girls and 18% of senior boys carry their bags correctly. At primary level 62% of pupils carried their bags correctly (Casey and Dockrell 1996).

(viii) Health Education Programmes

Health education programmes do not sufficiently address the areas of back care, correct lifting and carrying techniques and good posture.

Local Suggestions and Examples of Good Practice

5.1 Solutions - Reports from Schools

A very small minority of second level schools (6%) reported finding school based solutions to this problem. In the case of primary schools, the percentage was considerably greater (35%). It is not known, however, the extent to which the problem is alleviated by these school-based solutions.

In response to the Working Group survey, small numbers of second level schools reported the following actions to address the issue of heavy schoolbags:-

- lockers are provided
- double classes are arranged
- cooperation of parents is sought
- facilities for evening study are provided
- talks are given to pupils on organisational skills
- the number of Junior Certificate subjects is reduced
- students share books
- teachers co-ordinate homework
- homework sheets rather than copies are used

At primary level, locally-based solutions were reported more frequently. Examples of these solutions are:-

- pupils leave books not required for homework in school overnight
- storage facilities are provided e.g. pigeon holes, presses, baskets, shelves, old desks are provided
- parents cooperation is sought
- pupils use one copy for homework
- the school has a homework policy

- schoolbags are tidied regularly
- a timetable is provided for pupils
- homework clubs are organised for pupils

5.2 Examples of Good Practice

In addition to the survey carried out by the Working Group, many schools and parents made individual submissions. Some of the documentation contained suggested solutions which had been implemented in order to alleviate the problem. The following verbatim examples of good practice illustrate some of the measures which have been implemented by schools, parents and pupils at local level:-

(i) Primary School - Teaching Principal

"Our school policy is that pupils leave in school all books not needed for homework. This has certain benefits. It keeps larger books in good condition as the corners do not become 'curled up'. It also reduces the weight of the bags. The distribution of books does not take much time. I have six 'collectors and distributors'. They take five books each. It only takes a half a minute to give out or collect the books which are then left on the table".

(ii) Primary School - Newsletter for Parents

"Homework is staggered so that geography work is not usually set on the same evening as history etc. This enables pupils to leave some of their books and copies in school and not be carrying around unnecessary weight in their bags. I would be grateful if parents checked from time to time to see that pupils are only carrying what is necessary especially the eight who walk to school".

(iii) Parent of Primary Pupil

"There should be:-

- regular parental "auditing" of contents and

removal of non-essentials like sticker albums etc.

- awareness training for parents, children and teachers of the health hazards. This could be initiated by the National Parents Council (NPC) and disseminated through parents associations initially
- school overnight storage of books not required for homework. Classroom pool of colouring pencils etc.
- judicious scheduling of homework by teachers
- provision of drinks in school."

The parent asserts that these solutions would result in almost halving the weight of a typical schoolbag.

(iv) Primary School Principal

"A health officer from each of the Health Boards could visit each school to speak to pupils about (a) the problem of heavy bags, (b) advice as to the best ways of dealing with the problem. The parent must judge the suitability of the schoolbag for the child and insist that this is the bag to be purchased"

(v) Community College Principal

"Storage lockers are provided in school. Timetable is arranged to alleviate the weight of books. Supervised study is provided in school in the evening. Double session classes are provided in order to spread the burden of carrying books evenly throughout the week".

(vi) Second Level Pupils

"At the end of our project we presented these facts to the school authority and recommended that more lockers be provided and that students should stay domicile. Our newly elected Principal is astounded at our findings and stated that they would be taken into consideration for school year '96-'97".

These submissions demonstrate a growing awareness among schools, parents, and pupils themselves of this issue and some positive actions which have been taken at local level in order to alleviate the problem. They also are indicative of

many practical solutions which already exist and the dissemination of these and other examples of good practice will form an important part of awareness raising.

5.3 The Effectiveness of Local Measures

It is apparent from the survey results that primary schools are more confident than second level schools of their capacity to implement locally based solutions and of the impact of those solutions in alleviating the problem. The following quotations from second level principals appear to indicate that locally-based measures ameliorate but do not solve the problem.

"We have tried many solutions such as providing lockers, not demanding that textbooks be brought to classes - these are not the solution."

"No solution." (5 respondents)

"All students have lockers for storage. This is a help but not a solution."

"Redesign of texts would create a cost factor - a huge issue in this school."

"Need to carry up to a maximum of four subjects in bags between breaks."

"We have purchased three foot lockers, we have special homework arrangements but the sheer number of subjects mitigates against any meaningful difference."

"Lockers work to a certain extent but don't provide enough space."

"Homework policy not enough - there is a detailed policy in place."

Certain reservations are also expressed by primary principals, with particular reference to the practice of leaving books in school overnight.

"Partial solution by leaving some books and copies in school within space available."

"Homework requirements e.g. Maths - textbook, workbook, copy; English-reader, dictionary, workbook, copy - it all adds up!"

"Keeping books safe is a problem." (2 respondents)

"Books on tables do not allow for cleaning."

"Pupils' forgetfulness."

Further practical investigation is needed in order to discover the range of solutions which best meets the needs of these schools.

Solutions - Key Issues

6.1 Characteristics of Solutions

It is clear from the deliberations of the Working Group and from the analysis of the Survey data that a wide range of factors impinge on the weight of pupils' schoolbags. Many of these factors have their origin at school and local level while others concern the educational publishers. There is also a role in the issue for the Department of Education and Science. The following characteristics apply to the various measures which will be presented in this Chapter as the key solutions to the problem:-

- they are incremental and work in combination
- some may be implemented immediately whereas others require medium or long-term planning
- some are more suitable for one level of schooling than the other
- there are cost implications associated with some solutions
- certain levels of schooling may require greater attention than others (e.g. the Junior Cycle age group).

6.2 Awareness and Local Measures

Awareness on the part of schools, parents and pupils is crucial, in the first instance, in order to address this issue. The role of the Department, in this regard, should be to initiate an effective awareness-raising campaign using appropriate strategies which will stress the importance of the issue and encourage schools to take action.

The Department's awareness raising materials should consist of :

- a. A Departmental Circular
- b. A Poster and an Information Booklet

Schools need to examine the problem in relation to their own circumstances and investigate the current situation with regard to the weight of pupils' bags. Co-operation with parents is of major significance in initiating successful action. The provision of an effective homework policy involving, where appropriate, the co-operation of subject teachers is an important first step in ensuring that pupils are not required to carry too many textbooks in their bags.

Other points to be addressed by schools are in the appropriate section of the recommendations. These include whole-school issues such as timetables and curricular range. Issues for classroom teachers include training pupils in organisational skills, providing time and guidance on preparation for homework and encouraging pupils to take responsibility for back care. The role of parents is crucial in cooperating with the school on many of these local initiatives.

Health Education programmes should include advice on correct lifting and carrying techniques. Schoolbag design should promote broad shoulder straps and hip support, where applicable. The value of schoolbags with wheels which have become popular in some countries as a means of transporting textbooks and materials should be investigated further.

6.3 School Storage Facilities

In the Working Group Survey, 78% of second level schools and 77% of primary schools cited the provision of storage facilities as an desirable factor in the alleviation of the weight of schoolbags. The Department provides the option of locker facilities in all new second level school buildings. At primary

school level, the Educational Research Centre is currently investigating future school needs in terms of the provision of school accommodation and facilities.

Modern primary classrooms have ample storage furniture available in the form of shelves, trolleys and bookshelves. Submissions to the Working Group cited the usefulness of pigeon-hole shelving in classrooms in providing primary pupils with individual storage facilities. Some schools have provided this shelving with the aid of the Department's annual grant to primary schools.

A number of submissions to the Working Group suggested a return to the provision of storage facilities in pupils' tables. The Department, through its Building Unit provides specifications for furniture manufacturers. In this context the feasibility of providing for appropriate storage facilities in future specifications for furniture manufacturers should be examined.

6.4 The Need for Further Initiatives

In considering the need for further initiatives, the Working Group addressed the following question :

Can the weight of schoolbags be reduced to a provisionally acceptable level (i.e. 10% of body weight) if school storage facilities are available and appropriate local solutions including homework policy are in place?

This issue was considered separately for primary schools and second level schools.

(a) Primary Schools

The Working Group survey suggests that primary schools are more confident of finding a solution in this way. It is clear from evidence to the Working Group that many primary schools have identified and implemented a combination of solutions, involving, in particular, school overnight storage of books and planned homework arrangements. Books are usually left on pupils' tables or collected and stored on classroom shelving. Homework generally includes English, Irish, Mathematics and perhaps one other curricular area. In some schools,

school work is timetabled and pupils bring to school only those books which are needed on the day. It is important to know whether these measures reduce the weight of pupils' schoolbags to a more acceptable level. In considering this issue the Working Group estimated the weight of an average schoolbag plus its' contents. A typical schoolbag at 4th class and 6th class levels was then compared to average body weight for these age groups. Results indicated that when the aforementioned solutions are implemented, schoolbag weight can be reduced to the 10% level. Evidence to the Working Group suggests that where primary pupils leave their books in school overnight, problems of security have not generally arisen. However, schools should ensure that pupils' property is covered by insurance before implementing such solutions.

(b) Second Level Schools

Second level schools are less optimistic regarding the potential of local solutions combined with the provision of school storage facilities to alleviate the problem of heavy schoolbags (Chapter 5). A key question, therefore, for the Working Group concerned the adequacy of the above solutions. The Group sought to ascertain whether the provisions of locker facilities combined with the co-ordination of homework assignments in second level schools reduced the weight of schoolbags to an acceptable level. In view of the scarcity of data, it was not possible to compare weights of schoolbags under different conditions. The Working Group, therefore, adopted a practical approach to the investigation and considered:

- (i) the number of subject periods in the school day at second level indicating the number of textbooks required in school on a daily basis;
- (ii) the average number of subjects for which pupils would be expected to carry out homework assignments each night, if homework was co-ordinated;
- (iii) the weight of individual textbooks;
- (iv) acceptable schoolbag weight for these students based on the provisional 10% level of body/bag weight ratio.

Based on average body weights for this age group (42kg - 60kg), provisionally acceptable schoolbag weights range from 4 kg to 6 kg. Multi-level or omnibus textbooks weigh, on average, 1kg - 1.5kg per book. It can be readily deduced therefore that, allowing for weight of the bag itself, lunch and pencil case (average 1kg), the addition of 2 - 3 of these textbooks is sufficient to reach the maximum level of weight which is provisionally acceptable. This number of books would not be adequate to meet the needs of average homework assignments. Moreover it does not include the necessary copies, workbooks and notes. It is not surprising, therefore, that in the research by Laffan, McDonagh and McLoughlin 1998, it was ascertained that while over 90% of students in this study possessed lockers, 77% of students carried bags which were above the 10% level of body/bag weight ratio. It is concluded that the solutions within the domain of schools, parents and publishers are more amenable to short and medium term implementation. The provision of lockers could make some minor contribution by way of solution. This would apply during school hours when alternatives to carrying numbers of books from room to room cannot be provided. In the case of carrying books between home and school, lockers provide very little relief, except where parents and/or schools can meet the cost of duplicate sets of books.

6.5 Double Provision of Textbooks - Feasibility

A number of submissions to the Working Group suggested the provision of textbooks by the school as an additional solution to the problem of heavy schoolbags. Pupils would, in this case, be in a position to leave some or all of their textbooks at home. As an additional advantage, pupils could have access to a range of textbooks in certain curricular areas (e.g. history) thus exposing them to a variety of approaches and viewpoints.

The Working Group investigated the estimated cost of this provision by schools and the possibility of providing Department grants for this purpose. It was concluded that this cost would be prohibitive given current budgetary constraints. There may, however, be situations where schools themselves are in a position to implement this solution to a

partial degree. Schools may be able to purchase used textbooks from pupils at low cost. This solution would be particularly appropriate with regard to frequently used resource materials such as dictionaries which could be used by all classes.

6.6 Information and Communications Technologies

Solutions based on information and communications technologies, as discussed in Chapter 2, were mentioned in many submissions to the Working Group. In the context of existing practice in some schools it was noted that educational software already available complements the use of textbooks in the learning process.

Textbooks in CD-ROM format could be provided by educational publishers subject to customer demand and teachers should liaise with educational publishers in order to explore this potential where the appropriate hardware exists. However, for the majority of pupils, it is likely that the textbook will remain central to the learning process for the immediate future.

6.7 Changes in Textbook Design

In response to the Working Group Survey, 83% of second level Schools (total 60 respondents) highlighted the need for changes in textbook design in order to alleviate the problem of heavy schoolbags. The corresponding figure for primary schools was 31%. It can be seen therefore that the demand for initiatives in this area is considerably greater at second level. These schools specified the need to provide smaller, lighter textbooks, particularly at Junior Cycle Level.

(a) Providing Lighter Textbooks

Publishers are influenced by customer demand in designing the specific format in which a course or programme will be presented in textbooks. The IEPA affirms that there is considerable demand from teachers for multi-level or omnibus textbooks which contain two or three-year courses of study.

Submissions from the Association of Secondary Teachers of Ireland (ASTI) confirm this demand stating that comprehensive textbooks tend to be heavy, but more cost effective. In addition the ASTI states that multi-level textbooks give teachers more autonomy in the organisation of their programmes. However, in its submission to the Working Group the ASTI states that "stronger guidelines should be given to publishers concerning the layout and organisation of textbooks. Efforts should be made to reduce the size, split the content into different volumes, designate resource books to be used for reference at home, and workbooks to be used in class and for homework." Evidence to the Working Group suggests that, when awareness is raised, teachers include the weight of textbooks among the many factors which influence their choice.

The division of multi-level textbooks into smaller books would make a very significant difference to the weight of pupil's schoolbags and, when the additional cost is spread over two or three years, it is relatively marginal.

(b) Costings for Lighter Textbooks

The Working Group considered the additional cost to parents which these measures would involve and requested the IEPA to provide provisional estimates for sectionalised textbooks. A provisional estimate was submitted by the IEPA to the Working Group. The IEPA submission estimated that the additional cost of providing textbooks containing one-year portions of multiple-year courses would be approximately 17% of the average cost of an existing three-year textbook. Since this additional cost would be borne by parents, the opinion of the National Parents' Council (NPC) Post-primary was sought on this issue.

A small-scale survey was conducted among the NPC members. Results indicated that parents viewed changes in textbook design as very desirable, although reaction to the proposed additional cost was mixed. However, it is likely that if this additional cost was staggered over a three year period, parents would find this acceptable.

A submission from the Congress of Catholic Secondary School Parents' Associations recommends that "textbooks for each education cycle be prepared to cater for only one year at a time. For Junior Cycle for example, the textbook for each subject would be in three parts and only one part would be applicable to whichever class or years that the pupil was in".

6.8 Strategy for Change

It is concluded, therefore, that there is scope for a major initiative in reducing the size and weight of textbooks and that this initiative is particularly important at second level. Evidence to the Working Group suggests that there is considerable potential demand for this change from key decision makers at the level of each local school and that an effective awareness-raising campaign will play a crucial role in activating the demand.

Direct contact with the IEPA would go some considerable way towards communicating the views of parents and teachers on the issue of multi-level textbooks. In addition, the proposed Departmental Circular, Poster and Information Booklet should be circulated to Irish publishers.

6.9 Summary of Solutions

Solutions to the problem of heavy schoolbags are incremental and should be implemented in a cohesive manner in order to reduce the weight of schoolbags to an increasing degree. Effective awareness raising is crucial as an initial step in promoting action. Currently, local and school-based initiatives are of significance and are particularly successful at primary level. Significant measures can also be introduced at second level by teachers and parents. Also, the provision of smaller, lighter textbooks, particularly at second level, requires the communication of this demand by parents and teachers to publishers. This demand should be activated through awareness-raising measures.

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