Leisure activities and adolescent engagement in school learning

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One of the perennial themes in education is a version of the wider *nature vs. nurture* debate: *home vs. school*, or the extent to which differences in student achievement reflect home advantages more than differences in school learning opportunities. In the Competent Children/Learners longitudinal project, we found that children from low-income homes and those with non-qualified mothers had somewhat lower average scores than others before they started school; and those gaps are still evident at age 14, when they had attended school for 9 years. To some, this means that home opportunities and experiences, particularly in the early years, can be more powerful than formal education, and make it difficult for formal schooling to close the gaps (Nash & Prochnow, 2004); others wonder if this means that we are not teaching children from disadvantaged backgrounds well enough. Nine-year-old students who had a high level on the Early Home Literacy Activities index had higher average PIRLS reading scores (520) than those who had a medium level (499), who in turn had higher average reading scores than those who had a low level (481). Intriguingly, the gap is larger in New Zealand than most of the other countries taking part in PIRLS 2001 (551, 515, and 475).[1] However, the PISA data on literacy at age 15 do not show bigger gaps related to maternal qualification and parental occupation in New Zealand than in other countries, and our lowest quartile of students score above the international average.

One of the drivers of our work in the Competent Children/Learners project has been to understand why social characteristics[2] might advantage, or disadvantage, achievement. We are not as egalitarian as we sometimes like to think we are, but nor do we live in a society that segregates people with different characteristics, or sets a priori limits on what is possible. So what are the mechanisms by which social characteristics work so that by the age of 14, when the end of compulsory schooling is in sight, we do see differences in achievement? It seems feasible that these mechanisms include the ways that children and young people spend their time outside school, in terms of the knowledge, skills, and dispositions they develop through habit and practice, and can bring with them to their schooling. Thus one strand of the Competent Children/Learners project has been to see which kinds of time use outside school are related to achievement, to engagement in school, and to social characteristics.

The Competent Children/Learners project is a longitudinal study with a cohort of around 500 from the Wellington region, funded by the Ministry of Education and NZCER. It has followed the children from age near-5, when they were in early childhood education services, with further data collection at ages 6, 8,10, 12, 14, and we are just completing the data collection at age 16. Reports

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[1] However, in comparison to the two other native English-speaking countries, the size of this gap is similar to England, and somewhat larger than Scotland. (The Canadian data includes both English and French native speakers.) The index is based on parent reports of frequency of these activities with their child prior to school entry: read books; tell stories; sing songs; play with alphabet toys; play word games; read aloud signs and labels.

[2] The four social characteristics we have focused on are family income levels (both early, when the cohort was aged near-5, and current), maternal qualification, gender, and ethnicity.

on each phase up to age 12 are on the NZCER website, and a set of reports on the age 14 phase will be released early in 2006. The project name is "Competent Children", and latterly, as the cohort outgrew childhood, "Competent Learners" because we have focused on the development of "competencies", or aspects of knowledge, skill, and dispositions, which appear to be linked to positive participation in learning, work, and social relationships. We included literacy (reading comprehension and writing), mathematics, and logical problem solving (or non-verbal reasoning): these are measured through student tests; and a set of attitudinal competencies, some of which are akin to the key competencies that are now getting formal attention in the curriculum framework. These attitudinal competencies are: communication, perseverance, self-management, social skills with peers and with adults, and curiosity (measured by teacher ratings). At age 14, we added what we called self-efficacy, but this now seems a misnomer: the items in this include optimism, learning from mistakes, seeing from another point of view, and leadership.

In this paper, I start by briefly summarising some of the main trends we have found in the project, before describing the patterns of leisure use and interests for the cohort at age 14, and exploring how these relate to engagement in school and learning.

Trends in associations between competencies and leisure use before age 14

Activities that are similar to school work

Literacy – reading and writing – and mathematical activities (e.g. number use, measurement) are the prime work of early schooling.

No surprise then that literacy activities at home are associated with literacy performance, at each phase of the study. In this study, we are able to show that home literacy activities are also associated with the attitudinal competencies.

We also find that mathematics activities are associated – not just with mathematics performance, but also with literacy, and with the attitudinal competencies.

When we did some analysis of whether earlier activities had a bearing on age 6 and age 8 scores, we found that they did: particularly activities that were literacy or maths related (e.g. using fractions in everyday activities).

Family income and maternal qualification levels show some patterns one would expect: overall, more activities involving the use of reading and a wider range of reading, and somewhat more activities involving the everyday use of number, in advantaged[3] families.

Extracurricular activities

There is now a growing research literature on organised activities for children and young people, with value particularly seen in those that provide some challenge and goals (both tangible and intangible), build on children's interests while also enlarging them, not provide instant gratification, interaction with supportive and knowledgeable adults, and positive interaction with peers. That description of extracurricular activities is not unlike descriptions of the approaches to learning that are currently being advocated (e.g. Gilbert, 2005).

We asked parents about children's membership of clubs and organisations, lessons outside school, and also participation in music, from age 8; and we have analysed the associations of these activities with competency levels over age 8 to age 12. The trends are:

- higher average scores on both cognitive and attitudinal competencies for children who belonged to arts or performing arts clubs, or had performing arts lessons compared with those who did not belong or have lessons, irrespective of family income or maternal qualification levels; and
- higher average cognitive scores for those who made music, irrespective of family income or maternal qualification levels.

Again, opportunities for these kinds of activities are related to income and maternal qualification, along the usual lines.

Unlike some US studies, we have not found any associations between playing sports and student performance.

Leisure use

There is a lot of interest in children's use of electronic media, especially TV and ICT. In the Competent Children/Learners study we have information on both.

We have found that large amounts of TV watching have consistently shown negative associations – the cumulative contribution is often larger than the current contribution. These associations are stronger with the cognitive than the attitudinal competencies. In an earlier paper (Wylie, 2001)

[3] In this paper, I use "advantaged" to refer to medium or high levels of family income and maternal qualification and "disadvantaged" to refer to low family income ($30,000 or below), and lack of maternal qualification.

reasons for this are explored: while television is primarily visual, and does not demand that watchers respond using language, it may also appeal more to those whose reading is insecure. We have found that enjoyment of reading is higher among those who are not "heavy" watchers (3 hours or more a day). Both the nature of the medium – and the programmes available on it – and the time spent on it may create a negative spiral, particularly for those who do not have an early solid foundation for their reading, of lower engagement in reading, lack of confidence in reading, and, perhaps, the creation of individual identity that excludes or devalues reading.

But television is a cheap form of leisure use: and thus we find that heavier television users are more likely to be in disadvantaged homes.

ICT use has grown markedly over the time of the study, partly due to the increase in family computer ownership, partly the growing range of activities available on family computers, and partly the need for a certain literacy level needed to use (and enjoy) some activities. But ICT use does not take as much leisure time as TV. The patterns of links between ICT use and competency levels are less clear-cut than for television; and average amount of use was related to maternal qualification levels (less time spent by those with non-qualified mothers), but not to family income. There were trends at age 12 showing advantages for communication particularly from using wordprocessing, email, or graphics; and for mathematics from playing games and using the computer for homework or projects.

Some intriguing indicative associations were found at age 6, with parent reports of their child's favourite activity. Children who were interested in nature or science had higher average scores for curiosity, perseverance, social skills, and communication. Children who were interested in language had higher average scores for perseverance, self-management, social skills, communication, mathematics, and literacy. Those who liked drawing or painting showed much the same pattern as those who were interested in language, but did not have higher average scores for social skills. Those who liked physical activity best had lower average scores for perseverance, self-management, mathematics, and literacy. When we did this analysis, we did not take family income or maternal qualification into account, so I cannot report here whether family resources may also have been involved in shaping what children liked to do (what they had the opportunity to do).

Leisure use at age 14

I want to start by describing the broad patterns of leisure use, before focusing on TV, computer use, and reading.

Table 1 shows that watching television heads the list of the activities that were done often (more than twice a week) by the Competent Learners sample when they were 14. Activities and communication with peers were also frequent. Sport and physical activity were common, and somewhat more so than reading, making things, or the performing arts. In terms of extracurricular

activities as described above, there was more emphasis on sport than on the latter. Gender differences were evident for all these activities other than computer use, homework, and exercise. Family income and maternal qualification levels were associated with different patterns, along the lines one would expect (with one interesting exception: students from low-income families were more likely to often make things).

Table 1 **14-year-old leisure activities**

Frequency→	**Often**	**Never**
Activity↓	**%**	**%**
Watch television	72	1
Do homework	64[-]	1
Play sport	55	6
Talk to friends (phone/text)	54[+]	6
Use a computer	54	4[-]
Hang out with friends	53	<1
Play sport for fun	50	8
Read a book (not for school)	42	9
Do exercise/physical training	37	9
Play competitive sport	32	15
Play electronic games	23[-]	6
Practise singing/music/dance	20	51
Make things	10	15
Go to art/music/dance classes	8[-]	58
Do cultural activities (e.g. kapa haka)	4	77

+ =more than at age 12; - = less than at age 12

We looked at whether there were patterns for individuals of how they spent their time, and found four clusters. There are income-related differences for two of the clusters. Gender and ethnicity played more of a role.

Sports players – More likely to regularly play sports, exercise, and less likely to take part in performing arts. Thirty-four percent of the sample was in this cluster. Males were almost twice as likely as females to be in this cluster (43 percent c.f. 23 percent). Pacific young people were less likely to be in this cluster (13 percent). This cluster had the second lowest proportion of young people who enjoyed reading (52 percent).

Electronic-games~No strong interests – Similar level of electronic-game playing as the *sports players*, but no other interests undertaken regularly. Twenty-four percent of the sample was in this cluster. There was some relationship with family income: 33 percent of the low-income group were in this cluster, decreasing to 15 percent of the high and very high-income groups. Mäori and

Pacific young people were more likely to be in this cluster (36 percent c.f. 22 percent of Päkehä/European and Asian). This cluster had the lowest proportion who enjoyed reading (34 percent).

All-rounders – Regular sport and exercise, but also regular reading and participation in the performing arts. Twenty-eight percent of the sample was in this cluster. Females were almost twice as likely as males to be in this group (36 percent c.f. 21 percent). The very high-income group was also more likely to be in this cluster (41 percent). Päkehä/European and Asian young people were also more likely to be in this cluster (15 percent c.f. 5 percent of Mäori and Pacific). Sixty-seven percent of this cluster enjoyed reading.

Creative interests – Also regular participation in the performing arts, as well as regular involvement in making things; irregular sport and exercise. Thirteen percent of the sample was in this cluster. Seventy percent of this cluster enjoyed reading.

Three of these clusters indicate time spent out of school in ways that are reasonably aligned with school; the sports cluster somewhat less so, but secondary schools provide prime venues for participation in sport. The cluster that stands out in terms of spending time in ways which are not clearly aligned with school is the *electronic games~no strong interests* cluster, and this cluster did show less engagement in school and learning than the other three.

These differences in leisure activities on their own do not account for much of the variation in age-14 competency scores, but those in the *all-rounders* and *creative interests* groups had higher scores for mathematics, reading, logical problem solving, and the attitudinal composite.

When we looked at the previous average competency scores for these groups, we found some support for the idea that leisure interests are supported by previous levels of knowledge, skills – and probably confidence. These do not mark out totally distinct groups with separate trajectories over time, indicating the multistranded nature of children's development into adulthood. (I think we can take this complexity as grounds for optimism as well as a call for ongoing support and interest.)

The *all-rounders* group (with regular sport, exercise, and performing arts involvement) was more likely to have higher average attitudinal scores at each of the earlier ages. This group and the *creative interests* group were more likely to have higher average logical problem-solving scores at earlier ages. The trends were not so clear in relation to mathematics and reading; there were associations with scores at particular ages, but not consistently across time. Where there were associations, they showed higher average scores for the *creative interests* group for reading, and for the *all-rounders* and for the *creative interests* groups in mathematics.

Television use

The average time spent watching television was 2.38 hours, much the same as at age 12. Cartoons continued to be high up the list of the sample's three favourite TV programmes, but there was a marked rise in adult adventure/mystery programmes. Most of the programmes that were popular were serials, or ones that followed some narrative line (including sport). Sport, reality TV, and music programmes were more popular than at age 12. We wondered if there might be associations between the kinds of programmes watched, and engagement in school. We found six clusters or patterns among individuals. Gender showed some differences in preferences, but family income and maternal qualification showed a difference with only one cluster, and ethnicity, with none. Television does live up to its billing as a mass media, one which provides some experiences that are not distinctive in terms of social characteristics.

Adult programmes, including sports & news – 9 percent of the sample, more males

Light entertainment – 24 percent of the sample, more males

Mysteries & adventure – 25 percent of the sample, more females

Cartoons, sport, & reality TV – 18 percent of the sample, mostly male

Sitcoms & soap operas – 14 percent of the sample, more females

Soap operas, reality TV, & adult drama – 9 percent, mostly female

The leisure clusters showed some quite distinct patterns; these clusters do not, perhaps indicating the more limited range of experiences available on TV. So it is not surprising that we found no associations between the "leisure use" clusters, and the kind of TV preferred by individuals. Those who have been "heavy" TV watchers do not have different preferences than others. Age-14 attitudinal competency scores were similar. After taking family income and maternal qualification into account, the lowest average reading comprehension scores at age 14 were among the group that preferred cartoons, sport, and reality TV.

Do these TV preferences have anything to tell us about patterns of school engagement? Not really. The only link we found was with:

- higher absenteeism among those who prefer sitcoms and soap operas

  (because of the timing of these programmes?!).

So, thinking about how consistently we have found lower competency scores among those who are heavy TV watchers, and putting that with the lower levels of school engagement at age 14 among this group, it seems to me that we should be less concerned about particular tastes in TV programmes, than the overall time spent on the medium itself, and the time it takes that is not being used for more active pursuits or challenges that are likely to feed or support positive attitudes to learning and school engagement.

Computer use

Time spent on the computer each week out of school almost doubled between 12 and 14, to an average of 6.5 hours a week. Computer use was more frequent out of school (95 percent) than at school, where just over half the students were regularly using a computer. Computer use rose with family income and maternal qualification levels. About two-thirds used computers for wordprocessing; otherwise the main uses were to get information for homework or projects (85 percent), communication, games, and downloading material.

Table 2 **Internet activities at age 14 (2002–03)**

Activity	Age 14 – home internet users (n=435) %
Seeking information for homework/projects	85
Email	84
Chat online	70
Surfing	63
Games	62
Download music/movies/TV	61
Download pictures & video clips	51
Download software	32
Design/make web pages	13
News group	7
Buy things	6
Banking	6
Trade	3

Gender showed differences, with females more likely to use it for communication, wordprocessing, and seeking information; and males for games, and installing or downloading software. Use of computers to gain information for projects was related in the expected manner with family resources. But because computer use is near universal, and most of the sample had similar uses of it, we could not find any distinct clusters of computer usage that we could use for further analysis in relation to school engagement and competency levels. We did look at whether current time spent with computers was related to competency levels, but found no relationship.

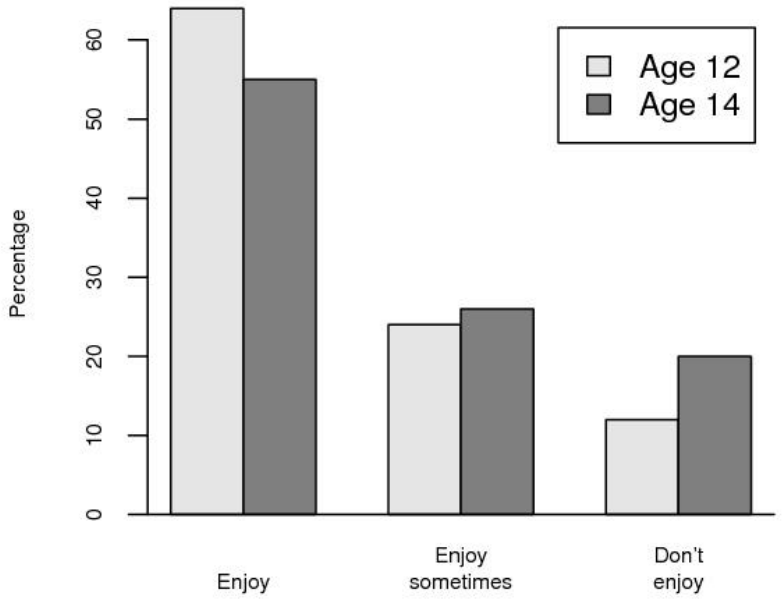
Unlike television, there are no associations with the amount of time per se, though we did find that those who had not used a computer at both ages 12 and 14 tended to have lower scores. This could mean that computer use is less attractive to those who had lower performance levels, or that ICT use can maintain or improve performance levels.

Looking back, we have found some trends with particular uses of computers. Those who used email at age 10, and remained doing so, had somewhat higher scores at age 14 for mathematics and reading. If computers were *only* used to play games over the ages of 10–14, those who did so had lower average scores for most competencies measured. If students started to use graphics at age 8, they tended to have higher scores for most competencies at age 14.

Reading

At age 14, reading was still enjoyed by over half the sample, but there was also a decline in reading enjoyment since age 12.

Figure 1 **Enjoyment of reading at ages 12 & 14**



Those who enjoy reading had higher scores on the competencies (cognitive and attitudinal) than both those who enjoyed it sometimes, and those who did not enjoy it. In turn, those who enjoyed reading sometimes had higher scores than those who did not enjoy reading.

Those who enjoyed reading had higher average scores for their engagement in school and had higher levels of motivation towards school. Not surprisingly, current levels of enjoyment of reading are linked to both present and past competency scores – from age near-5. When we grouped the sample in terms of their responses about whether they had enjoyed reading previously since age 8, the enjoyment of reading over time – which is more than simply decoding – was one of the strongest contributors to current levels of school engagement. There are thus reasonable signals from this study that early preschool experiences have an ongoing, or cumulative effect, underlining the importance of recent policy encouragement with examples for early literacy (and numeracy) activities within families and early childhood education services.

How does the enjoyment of reading (or lack of it) relate to other ways of spending time, and previous experiences?

We found that those who did not enjoy reading were more likely to be:

- in the *electronic games~no strong interests* cluster (and less likely to be in the *overall* cluster;
- less likely to be light TV watchers over time [conversely, those who enjoyed reading were most likely to be light TV watchers];
- less likely to complete their homework over time;
- less likely to be enthusiastic about going to school over time;
- more likely to have had bullying experience;
- seen as having difficult classroom behaviour at age 12; and
- more likely to show risky behaviour at age 14.

We may not be able to separate these from each other in a clear sequence – and, in fact, it is likely that the seedbed of turning away from school and the gains it has to offer is different for different children, and we do not need to find a single origin-point. Taken together, and compared with the habits and attitudes of young people who are engaged in school (albeit with varying degrees of enthusiasm and expectation), we can appreciate that "feeding the mind" has a value over and above a mark in a reading test.

It is more likely that these pointers to "risk" in children's development into young adults will occur for those in low-income families, or with non-qualified mothers: but it is not inevitable, and not confined to these groups. Nonetheless, it is clear that an early lack of resources and less exposure to the kinds of activities that are habitual in advantaged homes makes it harder for children from these groups to find continuity between what they know and do, and what they feel confident about, with what they are offered in school activities, and this puts them at risk for becoming the "at-risk" group in secondary school.

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