Abstract

This paper reports on findings of research on pupils’ perspectives on engagement and sense of belonging currently being undertaken within a schools university partnership for educational research (SUPER) involving eight secondary schools and the Faculty of Education, University of Cambridge. During the 2005/6 academic year, the SUPER schools decided that working under the umbrella of ‘pupil engagement’ would provide a desired for commonality of approach, whilst at the same time allowing individual action research projects appropriate to particular school contexts. Pupils’ perspectives on their sense of engagement and belonging were assessed during the summer term of 2006. The schools are now undertaking the first wave of an action research cycle utilising the findings of this assessment (reported in this symposium). Existing research suggests engagement is a key factor in pupil motivation and success which teachers can usefully draw upon to inform thinking and planning (Goodenow 1993, Watkins 2005). Pupil engagement has been investigated in various guises, for example, in relation to attitudes to school (Gray & McLellan, 2006), motivation to learn (Fredericks, Blumenfeld & Paris, 2004) from psychological perspectives, pupils’ affiliation and belonging to school (Deci & Ryan, 2000) and why belonging is important for ‘at risk’ pupils (Smith 2006). Hence the SUPER schools were keen to address these questions: (i) do pupils in their school feel the same degree of belonging as pupils in other SUPER schools?; (ii) are there different facets of school belonging, and if so, are there differences in the profile of belonging for their school compared to others?; (iii) are there particular groups of pupils that feel that they belong less than others? By understanding pupils’ perspectives, schools felt they would be in an informed position to identify potential areas of concern and plan action accordingly. Data was gathered from pupils via a survey and followed up by focus group interviews. Here we focus on the survey data. Two cohorts (Years 8 and 10) were selected for comparative purposes to elicit perspectives from pupils who had been in the school sufficiently long to hold an established view and to see how this might differ for younger pupils whilst at the same time ensuring the research was manageable. 2408 pupils completed the survey. Goodenow’s Psychological Sense of School Membership Scale was chosen for the survey as it has been used by several researchers and its psychometric properties have been documented (Goodenow 1993; Hagborg 1994; Hagborg 1998). The scale comprises of 12 items focusing on respect, inclusion, acceptance and support. Two items relating to sense of belonging in individual subject areas and the tutor group were added to see whether issues of belonging were domain specific. In addition four open-ended items (for instance ‘what would help you feel more of a part of the school’) were included to elicit further information. Background information (gender / age / school) was also sought. Analysis involving exploratory principal components factor analysis employing a Scree test to determine the number of underlying factors suggests that sense of belonging is multi-faceted and that a 3-factor solution is most appropriate. Following Varimax rotation these factors are interpreted as: (i) ‘being noticed and feeling others take an interest’; (ii) ‘feeling different to peers’ and (iii) ‘acceptance by peers’ and accounted for 55.7% of the variance. The paper will present these findings and compare them to those of other researchers using this measure. Scales were created for each facet and analysis of variance conducted to look at differences between the schools, gender and age. Significant differences between the schools, boys and girls and different year groups emerged. These will be also presented. Age and gender effects in attitudes towards school and motivation are well documented and findings from this study are discussed in terms of this literature. There are clear implications for educators, although it is acknowledged that treating different age and gender groups as homogeneous is misleading and that survey research only provides one insight into the situation. Nevertheless, this analysis, together with the interview data not reported here, has empowered SUPER schools to target their action research more effectively.
INTRODUCTION

This paper reports on research on pupils’ perspectives on engagement and sense of belonging currently being undertaken within a schools university partnership for educational research (SUPER) involving eight secondary schools and the Faculty of Education, University of Cambridge. During the 2005/6 academic year, the SUPER schools decided that working under the umbrella of ‘pupil engagement’ would provide a desired for commonality of approach, whilst allowing individual action research projects appropriate to particular school contexts. Pupils’ perspectives on their sense of engagement and belonging were assessed during the summer term of 2006. The schools are now undertaking the first wave of an action research cycle utilising the findings of this assessment (reported in this symposium).

Introducing SUPER

A partnership between a number of local schools and the University of Cambridge was set up in 1999 with the primary purpose of examining ‘whether, and if so how, the Faculty and a group of schools could work effectively as a partnership so as to serve the research interests of all members’ (McLaughlin, Black-Hawkins, Brindley, McIntyre & Taber, 2006: 14). This stemmed from the Faculty’s long-standing tradition of valuing and supporting practitioner research (see Stenhouse, 1975) and was a response to the interests and concerns of local schools, formulated against a background of vigorous debate about the nature and usefulness of educational research and knowledge.

The emergent SUPER project was designed to directly address one of the recommendations made by David Hargreaves in his call for ‘knowledge creating schools’; that ‘schools of Education should establish formal partnerships with designated “research schools” either singly or in consortia’ (Hargreaves, 1999: 142). A broad research aim ‘to observe, describe and document, analyse, interpret, conceptualise, understand and report the processes and outcomes of the work within the evolving partnership’ (McLaughlin et al., 2006: 15) was established, as were eight key research questions relating to issues such as the types of research knowledge schools and teachers value and find useful, and ways of conducting practice-based research that is rigorous whilst still meaningful and accessible to practitioners.

The overall aim and research questions have directed the work of the partnership since its inception and have informed action research undertaken to transform practice (Elliott, 1991) in individual school contexts. At different times and in different school contexts specific research questions have dominated so the focus of research has varied across participating schools. The initial two phases of research (1999-2002 and 2002-2005) were externally funded but since 2005 SUPER has become self-sustaining through the launch of a specialist Masters programme undertaken by selected practitioners from each school that also helps to build research capacity in participating schools.

In practical terms SUPER functions through regular meetings of key individuals from participating schools and Faculty members, including the Teacher Research Coordinators (TRC; senior teachers responsible for coordinating and supporting research in their schools as well as liaising with other TRCs and Faculty), SUPER school Headteachers, the Partnership Coordinator (a Faculty member) and critical friends (Faculty members assigned to each school who regularly visit to conduct research to help meet SUPER’s aims and support school research). Further details can be found in publications arising from the project (McLaughlin et al., 2006; McLaughlin, Black-Hawkins & McIntyre, 2007).
Over the first year of SUPER’s self-sustaining phase, it was agreed that a common focus across schools would facilitate the partnership in addressing the key research questions that continued to guide our work. Through discussion in TRC and Headteacher meetings over the 2005/6 academic year, ‘pupil engagement’ emerged as an issue of concern that all schools wished to address. It provided a sufficiently broad umbrella to enable schools to pursue aspects relevant in their specific contexts, whilst at the same time allowing the desired for comparability across contexts. As with previous work undertaken by the partnership, it was envisaged this research would take the form of action research as this approach is most compatible with the purpose and aims of SUPER (McLaughlin et al., 2006). Individual schools were to take action suitable to their circumstances within an agreed common time frame and with some common data collection tools and procedures. The project was conceived as comprising several phases of the cycle first outlined by Lewin (1946) incorporating planning, action and evaluation. The research is ongoing and the symposium will report on findings from the first full cycle of research undertaken between the summer terms of 2006 and 2008.

BACKGROUND

Before planning and conducting the pupil survey, the SUPER team noted existing research which suggests ‘pupil engagement’ is a key factor in pupil motivation and in turn academic success which teachers can usefully draw upon to inform thinking and planning (Goodenow 1993, Watkins 2005). Research going on in Scotland suggests a sense of belonging is particularly important for ‘at-risk’ students – for instance those who do not come from supportive home backgrounds (Smith, 2006). If such students feel part of their school community they are much more likely to engage with learning despite lack of support from home.

The term ‘pupil engagement’ is one variously construed and investigated in the literature as being, for example, in relation to pupils’ attitudes to school (Gray & McLellan, 2006), motivation to learn (Fredericks, Blumenfeld & Paris, 2004), and pupils’ affiliation and sense of belonging to school (Deci & Ryan, 2000). No clear consensus emerges from the literature with McMahon and Portelli (2004: 60) referring to it as ‘a popular but at times empty and superficial catch-phrase or slogan’ while Newmann (1986:242) suggests ‘engagement is difficult to define operationally but we know it when we see it and we know it when it is missing’. In later work, Newmann (1992:12) defines engagement as ‘... the student’s psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote.’ Munns and Woodward (2006:194) note that engagement is more than being ‘on task’ and complying with teacher instructions. They suggest engagement is when pupils are reflectively involved in deep understanding (cognition), genuinely valuing what they are doing (emotion) and actively participating in school/classroom activities (behaviour). Intense cognitive engagement has also been described by Csikszentmihalyi (1991) as a state of ‘flow’. Self-determination Theory (SDT) also plays its part (e.g. Deci & Ryan, 2000) claiming that core human needs (such as feelings of competence and control) need to be met in order for people to be engaged. Social psychological theories of learned helplessness (e.g. Dweck, 2000) also highlight the importance of perceptions of competence and control.

Drawing on data from 44 peer-reviewed studies on pupil engagement, Fredericks et al (2004) construe ‘engagement’ as a highly complex and multi-dimensional construct comprising of three key factors: (i) cognitive (personal investment in learning); (ii) behavioural (classroom...
and extra-curricular participation and attendance); (iii) psychological (sense of belonging, relationships with teachers and peers. Deci and Ryan (2000) also refer to ‘relatedness’ as a third core human need. Writers of the report ‘Engaging Schools’ (National Research Council and the Institute of Medicine, 2004) from the United States, found research evidence also suggested three sets of variables as psychological mediators of pupil engagement: (i) beliefs about competence and control; (ii) values and goals; (iii) sense of social connectedness.

Noting the increasing interest in ‘pupil engagement’ in the research literature, SUPER schools felt it was important to investigate this in their own contexts. If their pupils didn’t feel they belonged it seemed likely they would not engage in learning and might fail to achieve their potential. Schools were therefore keen to address the following questions: (i) do pupils in their school feel the same degree of belonging as pupils in other SUPER schools?; (ii) are there different facets of school belonging, and if so, are there differences in the profile of belonging for their school compared to others?; (iii) are there particular groups of pupils who feel they belong less than others? By gathering pupils’ perspectives, schools felt they would be in an informed position to identify potential areas of concern and plan action accordingly.

Recognising the complexity of ‘engagement’ as a construct (Fredericks et al, 2004), schools, in collaboration with faculty members, therefore decided to focus on pupils’ sense of belonging for this initial phase of the research since ‘belonging’ is an important aspect of engagement (Deci and Ryan, 2000; Fredericks et al, 2004). Rather than having assumptions, schools decided it would be valuable to find out from pupils themselves how strongly they felt they belonged to their school community. In the summer of 2006, schools conducted a survey of their pupils in Years 8 and 10 using a questionnaire to assess their sense of belonging to school (details below). The questionnaire had been used by Watkins (2005) in his research on classrooms as learning communities and was seen as a useful diagnostic tool to identify the degree to which pupils feel part of their school community.

THE RESEARCH

Rationale and aims of the wider research

The current phase of SUPER research

In this paper we specifically focus on data gathered during the initial planning stages in the summer term of 2006, which informed the action undertaken in each context. Examples of action research in individual school contexts will be presented in two case studies in the second paper in the symposium. The third paper focuses on the role of the University within the partnership.

Design & Methods

The decision to assess pupil engagement and look for trends and patterns to inform possible interventions called for a quantitative measure. This was accomplished by conducting a survey completed in the summer term of 2006. This was followed up with in-depth interviews over the 2006/7 academic year with purposefully selected pupils from those that volunteered whilst completing the survey. Hence a mixed methods approach (Tashakkori & Teddlie, 1998) was taken. Acknowledging the fact that pupils are ‘expert witnesses’ in their own learning (Rudduck & Flutter, 2004), the purpose of the interviews was to elucidate the survey
findings to help to understand when and why students feel engaged and disengaged to inform the planning of the interventions. Due to space constraints, in this paper we focus on findings from the survey.

As has been discussed, engagement is a rather nebulous term that can be conceptualised in a variety of ways linking to a number of psychological constructs such as motivation. Hence there are a number of instruments, associated with different theoretical conceptualisations, that might have been drawn on. The SUPER partnership had been strongly influenced by the work of Chris Watkins focussing on classrooms as learning communities (see Watkins, 2005) and had developed links with him in earlier SUPER research. In his research, Watkins had used a modified version of Goodenow’s Psychological Sense of School Membership (PSSM) scale (Goodenow, 1992; 1993b) to demonstrate the link between a pupil’s affiliation or sense of belonging to school as a measure of their engagement and academic success. Goodenow (1992; 1993a; Goodenow & Grady, 1993) had initially shown that psychological sense of school membership was strongly associated with motivation and engagement in terms of effort and achievement and these findings were later replicated and expanded upon by Hagborg (1994; 1998). As the scale was premised on Wehlege’s model of school dropout prevention (Wehlege, Rutter, Smith, Lesko & Fernandez, 1989), it appeared not only to have generated educationally important empirical findings but also had a sound theoretical basis. Hence ‘sense of school belonging’, appeared to be an appropriate lens for examining engagement and Goodenow’s PSSM instrument appeared to provide a suitable measure to assess it. SUPER schools therefore decided to adopt the modified version\(^1\) developed by Watkins as this was suitable for schools in the UK context\(^2\).

The SUPER PSSM scale comprises 12 items focusing on respect, inclusion, acceptance and support. A copy of these items can be found in the Appendix. Pupils responded on a 4-point Likert scale indicating whether the item in question was ‘not at all true’ (scored 1), ‘sometimes true’ (scored 2), ‘often true’ (scored 3) or ‘completely true’ (scored 4). The questionnaire also included two items relating to sense of belonging in individual subject areas and the tutor group to see whether issues of belonging were domain specific (scored on the same 4-point scale). In addition four open-ended items (for instance ‘what would help you feel more of a part of the school’) were included to elicit further information, although findings from these items are not included here. Background information (gender / age / school) was also sought.

Responses to the SUPER PSSM scale items together with suitably coded demographic information (year / gender / school) were entered into an SPSS datafile, which was subsequently cleaned prior to analysis.

**Participants**

The SUPER partnership includes 8 schools. All of these are located in East Anglia in villages or small towns. Half of these are Village Colleges\(^3\) and all serve the needs of their local

---

\(^1\) Goodenow’s original scale of 18 items was developed for use in the US context and was subsequently shortened by Hagborg to 11 items based on an analysis of the psychometric properties of the scale. Watkins’ modified version draws from the shortened and original versions of the scale and contains 12 items suitable for use in the UK school context.

\(^2\) The scale is subsequently referred to as the SUPER PSSM scale.

\(^3\) Village Colleges were originally conceived by Henry Morris, who took up the post of Chief Education Officer for Cambridgeshire in 1922 at a time when the county was extremely deprived. The idea was to serve the needs
community. None are in direct competition with other local secondary schools; hence as a whole they can be regarded as genuinely comprehensive. Two schools are upper schools (serving pupils aged 13-18 years), whilst the others are 11-16 secondary schools. Attainment on entry is broadly in line with the national average, the percentage of pupils entitled to free school meals is lower than average and the percentage of pupils holding statements of educational needs is generally lower than the national average. Due to the semi-rural neighbourhoods served, pupil populations are more homogeneous than might be found in urban environments with only one city having a wide range of pupils from ethnic backgrounds. All the schools (bar one) have very few pupils for whom English is a second language.

Conducting the survey with all year groups would have been unmanageable. Consequently two cohorts (Years 8 and 10⁴) were selected for comparative purposes to elicit perspectives from pupils who had been in the school sufficiently long to hold an established view and younger pupils who had joined the school more recently⁵. A total of 2408 pupils across the 8 schools completed the survey.

**FINDINGS**

First of all descriptive statistics were calculated. This was followed up with an exploratory factor analysis to determine whether sense of school belonging is a unitary or multi-faceted construct (Goodenow, 1993b; Hagborg, 1994; 1998). A 3-factor solution appeared to be most appropriate, hence scales were created for these factors and they were interpreted. Analysis of variance was conducted to investigate differences between the schools, genders and year cohorts involved on these factors. These analyses are presented in the following subsections.

**Descriptive statistics**

The average (mean) response to each question and an indication of the variability in these responses (standard deviation) are shown in table 1.

As pupils had responded on a 4-point scale where 1 represents ‘not at all true’ and 4 represents ‘completely true’, it is clear from the mean scores that the overall response to most of the items tended to be between these two extremes. Given that the mid-point of the scale is 2.5, which arguably represents a neutral opinion, it would appear that responses to questions 1, 2, 4, 5, 7, 8, 9, 11 & 12 averaged around this midpoint, indicating that on the whole pupils do not hold a strong opinion about these issues. The standard deviations, a measure of the variability in response, however indicate a degree of spread suggesting some students did feel strongly about these items. This is particularly the case for question 7, where the mean score is nearer the top of the scale (2.74), indicating that the majority of pupils tended towards agreeing that they could talk to a teacher or adult in school if they had a problem. However a sizable minority felt this was ‘not at all true’ (in fact 19% of pupils).

---

⁴ The upper schools contrasted Y10 and Y12
⁵ These particular cohorts was chosen on pragmatic grounds as the survey was conducted in the summer term and the schools did not wish to involve students who were taking external examinations

of the whole community by providing education for children aged 11-16 years during the day and education and leisure for adults outside school hours.
There are three questions for which the mean score is somewhat lower than the midpoint of the scale (less than 2), indicating a tendency towards disagreement. These questions (3, 6 & 10) relate to acceptance and are negatively phrased. Therefore, the fact that pupils suggest these items are not true for them is actually a positive outcome. However, the standard deviation again reveals that a small number of pupils (around 4% for questions 3 & 6 and 8% for question 10) feel they don’t belong.

Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 feel like a real part of the school</td>
<td>2.62</td>
<td>.801</td>
</tr>
<tr>
<td>Q2 people notice when I am good at something</td>
<td>2.37</td>
<td>.731</td>
</tr>
<tr>
<td>Q3 hard for people like me to be accepted here</td>
<td>1.63</td>
<td>.795</td>
</tr>
<tr>
<td>Q4 my opinions taken seriously by other students</td>
<td>2.62</td>
<td>.702</td>
</tr>
<tr>
<td>Q5 most teachers are interested in me</td>
<td>2.22</td>
<td>.753</td>
</tr>
<tr>
<td>Q6 sometimes I feel as if I don't belong here</td>
<td>1.69</td>
<td>.799</td>
</tr>
<tr>
<td>Q7 can talk to a teacher or adult with a problem</td>
<td>2.74</td>
<td>1.14</td>
</tr>
<tr>
<td>Q8 people at this school are friendly to me</td>
<td>2.94</td>
<td>.757</td>
</tr>
<tr>
<td>Q9 treated with as much respect as other students</td>
<td>2.75</td>
<td>.869</td>
</tr>
<tr>
<td>Q10 feel very different from most students</td>
<td>1.90</td>
<td>.912</td>
</tr>
<tr>
<td>Q11 the teachers here respect me</td>
<td>2.63</td>
<td>.851</td>
</tr>
<tr>
<td>Q12 very proud belonging here</td>
<td>2.66</td>
<td>.881</td>
</tr>
</tbody>
</table>

There are no questions that pupils strongly agreed with, although they were most positive about question 8: that people at school were friendly towards them. In fact 72% of pupils agreed this was ‘often’ or ‘completely true’.

The overall picture presented, therefore, is one of pupils not feeling particularly strongly about most of the items presented to them. However it is clear that some pupils do hold strong views (positive and negative) on these issues. The fact that the means scores are not towards the extremes of the scale indicate the absence of ceiling or floor effects and given the degree of variation (indicated by the standard deviation), the items appear sufficiently discriminating. Therefore further analysis was warranted.
Factor analysis

Analysing response to individual questionnaire items does not provide a sense of the overall pattern of response to similar items. Therefore the next step in the analysis was to move from a consideration of individual items to the broader picture. The original creator of the PSSM scale indicated that the items formed a single scale or dimension assessing ‘sense of school belonging’ (Goodenow, 1993b). If this were the case the analysis would proceed by calculating composite scores for each pupil on the scale (i.e. by summing their scores across the 12 items) and using these scores to compare different groups of interest. However, subsequent research has examined whether the items do indeed create a single scale. This research has employed a statistical technique called factor analysis, which provides insight into how sensible it is to consider a number of items sufficiently alike, in terms of how people respond to them, to form a single scale or dimension. If the items form one scale then one factor will be identified. If not, the analysis indicates the number of scales or dimensions that might exist through the number of factors identified. This approach has suggested that the 12 items might be better conceptualised as comprising three different scales or dimensions, as three factors were identified (Hagborg, 1994). This matter therefore requires further consideration.

Following his original study, Hagborg (1998) developed a shortened version of the PSSM scale based on items associated with the first of the three factors he identified to enable a unitary scale to be created. The SUPER PSSM scale, however, is not the same as Hagborg’s shortened version so it seems unlikely that the items form a single scale. Nor is it the same as the original instrument, as it does not contain all of the original 18 items, so it is unclear whether it is best conceptualised as three separate dimensions. Nevertheless, it seems likely that the SUPER PSSM instrument taps a multi-faceted construct meaning that the calculation of a single ‘sense of school belonging’ score would be misleading. For this reason an exploratory factor analysis was conducted to determine the number of dimensions.

Factor analysis is an umbrella term for an approach to identifying dimensions or factors and there are many different methods or algorithms that can be used when conducting this technique, which make slightly different assumptions about the data. Several extraction algorithms were explored but as the findings from all analyses were very similar, findings from the principal components analysis with varimax rotation are presented. A scree test was used to determine the most appropriate number of factors, which entails identifying the point at which the gradient on the Scree plot, shown in figure 1, dramatically changes from a steep drop to a flattening out (hence the name, Scree plot). This clearly demonstrates that for this data, 3 underlying factors or components appear to exist.

Subsequently 3 factors were extracted and interpreted. These accounted for 55.7% of the variance. To interpret the factors to give names to the dimensions, it is necessary to see

---

6 Although there was no reason to suppose the factors would be orthogonal, findings from oblique rotation were similar and varimax rotation is seen as an efficient method of obtaining simple structure that avoids extracting a general factor Loehlin, J. C. (1992) *Latent Variable Models: An introduction to factor, path, and structural analysis*, (Second edn) (Hillsdale, NJ, Lawrence Erlbaum Associates), so this is reported.

7 Scree tests are regarded as a more effective way of determining the appropriate number of factors than the SPSS default mechanism of extracting factors with an eigenvalue of more than one Kline, P. (1994) *An Easy Guide to Factor Analysis*, (London, Routledge). Scree plots graphically show the eigenvalues of the factors or principal components extracted in the analysis.

8 Hagborg (1994) analysis, which also extracted 3 factors, accounted for a similar percentage (50%) of the variance, suggesting the 3 dimensions identified provide a reasonable explanation for the variation in pupils’ response.
which questions are associated with each of the three factors or components. This can be found in the rotated factor solution, which is presented in table 2.

Questions 11, 7, 5, 12, 1, 2, & 9 are (in decreasing order of strength) associated with the first factor. These questions relate to relationships with teachers but also include personal pride, feeling part of the school, being noticed and respected by others. This therefore does not appear to encompass a specific aspect of belonging and for this reason this factor was labelled ‘general sense of belonging to the community’.

Questions 10, 3, 6 & 8, which are associated with the second factor, concern issues of feeling different and fitting in. This factor was therefore labelled ‘feeling different from other pupils’.

The final factor, which is associated particularly with question 4 but also to a lesser extent with questions 9 & 8 was slightly more difficult to interpret but seemed essentially to be about respect. Hence, this was labelled ‘respect, especially from peers’.

A comparison of the factors identified in this data with those extracted by Hagborg (1994) using the original 18 item instrument reveals considerable similarities. The first two factors are practically identical (the main difference being that some of the items not included on the SUPER PSSM were found to load on the first factor). The third factor differs, however. Hagborg extracted a factor he labelled ‘acceptance’ but this was associated with a number of items not included on the SUPER PSSM, therefore it would not have been possible to extract such a factor from the data here. This casts some doubt on the validity of the third factor identified, particularly as it is only strongly associated with one of the items on the questionnaire. Nevertheless overall there is considerable support for the three dimensions identified and further analysis was undertaken on this basis.
Table 2: Rotated factor solution

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q11</td>
<td>.722(^9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q7</td>
<td>.706</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q5</td>
<td>.681</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q12</td>
<td>.679</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1</td>
<td>.582</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2</td>
<td>.575</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10(^10)</td>
<td>.780</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q3</td>
<td>.763</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q6</td>
<td>.744</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q8</td>
<td>.527</td>
<td>.430</td>
<td></td>
</tr>
<tr>
<td>Q4</td>
<td></td>
<td></td>
<td>.730</td>
</tr>
<tr>
<td>Q9</td>
<td>.426</td>
<td></td>
<td>.440</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Table excludes factor loadings < 0.4

The dimensions of school belonging

Scales were created for each of the factors identified through summing pupils’ scores on the items associated with each factor\(^11\). As the negatively worded items (Q3, 6 & 10) had been reverse-coded, in all cases the higher the score recorded, the more positive the pupil feels

\(^9\) These figures, called the factor loadings, indicate how strongly each item on the questionnaire is associated with each of the 3 factors and are interpreted in a similar fashion to correlation coefficients (i.e. values in range -1 to 1 with 0 indicating no association). Hence the loading of Q11 on the first factor is 0.722, indicating that Q11 is strongly and positively associated with the first factor. Loadings less than 0.4 have not been shown so that the pattern of significant loadings is more apparent, and is an acceptable procedure Kline, P. (1994) An Easy Guide to Factor Analysis, (London, Routledge). Hence Q11 is not strongly associated with either the second or third factors.

\(^10\) As Q3, 6 & 10 were negatively phrased these have been reverse-coded such that ‘completely true’ scored 1, ‘often true’ scored 2, ‘sometimes true’ scored 3 and ‘not at all true’ scored 4. This means that higher scores across all items reflect a more positive response.

\(^11\) Although the data has been captured using a Likert scale it is acceptable to treat the such attitudinal data as interval data Henerson, M. E., Lyons Morris, L. & Taylor Fitz-Gibbon, C. (1987) How to measure Attitudes, (Second edn) (Newbury Park, CA, Sage Publications Inc.).
about school belonging. Descriptive statistics for each scale are presented in table 3 and the distributions of scores on each belonging dimension are shown in figures 2 to 4.

### Table 3: Descriptive statistics for the three school belonging scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Number of students</th>
<th>Cronbach α&lt;sup&gt;12&lt;/sup&gt;</th>
<th>Minimum value</th>
<th>Maximum value</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>General sense of belonging</td>
<td>2337</td>
<td>0.782</td>
<td>7</td>
<td>28</td>
<td>18.0</td>
<td>4.01</td>
</tr>
<tr>
<td>Feeling different</td>
<td>2351</td>
<td>0.723</td>
<td>4</td>
<td>16</td>
<td>12.7</td>
<td>2.41</td>
</tr>
<tr>
<td>Respect especially from peers</td>
<td>2367</td>
<td>0.625</td>
<td>3</td>
<td>12</td>
<td>7.94</td>
<td>1.76</td>
</tr>
</tbody>
</table>

12 Cronbach alpha is a measure of the internal consistency of the scale. This is interpreted like a correlation coefficient. Values >0.7 are considered respectable, although it has been suggested that slightly lower values can be tolerated with attitude measurements. Ibid.

**Figure 2: The distribution of scores on the 'general sense of belonging to the school community' scale**
Figure 3: The distribution of scores on the 'feeling different from other pupils' scale

Figure 4: The distribution of scores on the 'feeling respect, especially from peers' scale
The distributions shown in figures 2 to 4 and sizable standard deviation values indicate that pupils hold a range of opinions on each of the three facets of school belonging. Indeed, the maximum and minimum values indicate that scores were recorded across the whole range of possible values, suggesting that the scales are discriminating between pupils appropriately. The mean values for two of the three dimensions (‘general sense of belonging’ and ‘respect’) fall approximately at the mid-point of the scale of possible scores, suggesting that most pupils do not hold strong views on these matters. There are, however, small numbers of students who hold firm opinions, both positive and negative on these issues. The distributions for both of these dimensions are reasonably symmetrical around the mean score indicating an approximately normal distribution of scores.

The distribution of scores on the ‘feeling different’ dimension is not like those for ‘general sense of belonging’ and ‘respect’. In this case the mean score is towards the top end of the scale, which is reflected in a skewed distribution. Given that higher scores reflect more positive views, this suggests overall that pupils don’t tend to feel different from their peers.

The internal consistency rating of each of the three scales (Cronbach alpha values) suggest that these scales are reliable, which together with findings from the factor analysis provide firm support for conducting further analysis on the basis of these scales. However it should be noted that the three dimensions are strongly related to each other; demonstrated by the moderate to strong positive correlation coefficients shown in table 4.

### Table 4: Correlations between the three belonging dimensions

<table>
<thead>
<tr>
<th></th>
<th>General Sense of Belonging</th>
<th>Feeling Different</th>
<th>Respect</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Sense of</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belonging</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling Different</td>
<td>0.403*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Respect</td>
<td>0.638*</td>
<td>0.629*</td>
<td>1</td>
</tr>
</tbody>
</table>

* p<0.01

Examining differences between groups of pupils

Differences between boys and girls, pupils of different ages, and pupils at different schools were examined in turn.

$t$-tests revealed gender differences on each of the three belonging dimensions, which are shown in table 5.

---

13 Scatter plots indicated that the relationships between each pair of variables were linear. Pearson Product Moment correlation coefficients were therefore calculated as the Central Limit Theorem means that the departure from normality of the ‘feeling different’ dimension is not problematic for applying parametric testing due to the large sample size.
Table 5: Gender differences on the belonging dimensions

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th></th>
<th>Girls</th>
<th></th>
<th>t value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Mean</td>
<td>Std. Deviation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Sense of Belonging</td>
<td>17.9</td>
<td>4.09</td>
<td>18.1</td>
<td>3.92</td>
<td>1.637</td>
<td>0.102</td>
</tr>
<tr>
<td>Feeling Different</td>
<td>12.6</td>
<td>2.46</td>
<td>12.9</td>
<td>2.36</td>
<td>2.983</td>
<td>0.003</td>
</tr>
<tr>
<td>Respect</td>
<td>7.83</td>
<td>1.78</td>
<td>8.05</td>
<td>1.73</td>
<td>3.040</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Girls are significantly more positive than boys in their perceptions of the respect they gain from their peers and in not feeling different. Although the difference on the general sense of belonging to the community dimension is not significant the girls mean score is slightly higher than that of boys. These findings suggest that overall girls are more positive than boys in feelings of belonging.

Analysis of variance was conducted to compare pupils in different year cohorts. The findings are presented in table 6.

Table 6: Age differences on the belonging dimensions

<table>
<thead>
<tr>
<th></th>
<th>Year 8</th>
<th></th>
<th>Year 10</th>
<th></th>
<th>Year 12</th>
<th></th>
<th>F value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Mean</td>
<td>Std. Deviation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Sense of Belonging</td>
<td>18.5</td>
<td>3.82</td>
<td>17.6</td>
<td>4.20</td>
<td>18.4</td>
<td>3.45</td>
<td>15.397</td>
<td>0.000</td>
</tr>
<tr>
<td>Feeling Different</td>
<td>12.6</td>
<td>2.45</td>
<td>12.8</td>
<td>2.39</td>
<td>13.1</td>
<td>2.33</td>
<td>5.290</td>
<td>0.005</td>
</tr>
<tr>
<td>Respect</td>
<td>8.00</td>
<td>1.75</td>
<td>7.84</td>
<td>1.77</td>
<td>8.22</td>
<td>1.70</td>
<td>6.060</td>
<td>0.002</td>
</tr>
</tbody>
</table>

There are significant age differences on all three dimensions. Post-hoc comparison tests revealed that Year 10 felt a significantly weaker general sense of belonging to the school community than either Year 8 or Year 12, whilst Year 8 and Year 12 did not differ significantly from each other. Year 12 students were also the most positive in terms of not feeling different (where they are significantly more positive than either Year 8 or Year 10) and thinking they are respected (where they are significantly more positive than Year 10).

As only two of the schools surveyed Year 12, it may be more useful to focus on the years of compulsory schooling. It would appear that general sense of belonging to the community declines with age as Year 10 are significantly less positive than Year 8. Year 10 are also a

---

14 Tukey’s HSD test
little less positive than Year 8 about the respect they perceive, although they are a little more positive about not feeling different. Neither of these latter differences is significant.

Finally, analysis of variance was conducted to examine differences between the participating schools. Findings are presented in table 7

Table 7: Differences between the SUPER schools on the belonging dimensions

<table>
<thead>
<tr>
<th>School</th>
<th>F value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A(^{15})</td>
<td>17.8</td>
<td>17.6</td>
</tr>
<tr>
<td>B</td>
<td>12.5</td>
<td>12.5</td>
</tr>
<tr>
<td>C</td>
<td>7.71</td>
<td>7.90</td>
</tr>
<tr>
<td>D</td>
<td>7.71</td>
<td>7.90</td>
</tr>
<tr>
<td>E</td>
<td>7.71</td>
<td>7.90</td>
</tr>
<tr>
<td>F</td>
<td>7.71</td>
<td>7.90</td>
</tr>
<tr>
<td>G</td>
<td>7.71</td>
<td>7.90</td>
</tr>
<tr>
<td>H</td>
<td>7.71</td>
<td>7.90</td>
</tr>
</tbody>
</table>

It is very clear that there are differences between the schools on each of the belonging dimensions. Pupils in school D, for instance, are most positive on all three dimensions. Post hoc comparison tests, however suggest the differences are not as stark as they initially appear, as the schools cluster into overlapping groups. In fact the only difference that stands out as significant is that between school G and school D on the general sense of belonging to the school community dimension.

It would be misleading to make assessments of school based on this picture alone, as the schools did not survey the same year groups in all cases. Two of the eight schools are upper schools and surveyed Years 10 and 12 rather than Years 8 and 10, and as has been noted above, Year 12 pupils were more positive than younger pupils. School D is one of these upper schools, so the positive perceptions recorded here can be, at least partially, explained by this factor.

If schools C&D (the two upper schools) are excluded so that like is being compared with like, and analysis of variance is run with a model considering age, gender and school effects simultaneously it becomes clear that the picture is much more complex than that presented above. School, gender and age effects are found to significantly interact in the case of general sense of belonging to the school community (F(5, 1560) = 2.264, p = 0.046). This means that a straightforward prediction of the perceptions held by a particular group of students, knowing their age, gender and the particular school they attend, cannot be made. The picture varies from school to school. This is illustrated in figures 5 and 6.

---

\(^{15}\) For anonymity schools have been labelled A to H. For ease of presentation only the mean values for each school are shown.
Figure 5: Mean scores of Year 8 pupils by school

Figure 6: Mean scores of Y10 pupils by school
Each school has an individual pattern of pupil response. In school A, for instance, although the overall picture was for Year 10 to be less positive than Year 8 and for gender differences not to be significant; here Year 10 girls are actually more positive than Year 8 girls and whilst girls are more positive than boys in Year 10, in Year 8 boys are more positive than girls. In contrast, whilst Y10 pupils in school F are less positive than Year 8 as would be predicted, boys are more positive than girls in Year 10 but vice versa in Year 8. These two examples illustrate the complexity of the situation in individual schools.

DISCUSSION

We shall discuss the findings with respect to three main issues. Firstly, we compare our findings to those reported in the literature to identify the specific contribution this study makes. Secondly, the implications of the findings for SUPER schools will be outlined. Finally we consider the broader issue of pupil engagement and raise questions about the utility of the approach the SUPER schools are taking in their ongoing action research.

(i) Comparison of key findings with the literature

The analysis was undertaken to identify whether there were differences between specific groups of pupils in the participating SUPER schools because gender and age effects are well established in the wider literature relating to pupil engagement. This study has focused on one facet of pupil engagement, namely school belonging, which has been the subject of less research than pupil engagement in general. It was therefore unclear whether gender and age effects would emerge in sense of belonging.

Gender Effects

Turning to gender effects first, girls were found to be significantly more positive than boys on two of the three belonging dimensions. These findings are in keeping with previous research as previous studies utilising the original PSSM scale (Goodenow, 1992; Hagborg, 1994) also demonstrated that girls had a more positive sense of belonging to school than boys. However this study extends previous work as it demonstrates the particular facets of sense of belonging that girls are more positive about; specifically that they don’t feel different to and perceive a greater level of respect from their peers. They do not differ from boys in their perceptions of general sense of belonging which includes relationships with teachers, which is interesting and merits further research.

The fact that girls overall do have a more positive sense of belonging is not unexpected as Goodenow’s (1992) original work demonstrated the association between sense of belonging and motivation and extensive work in the motivation field based on Dweck’s distinction between adaptive and maladaptive motivational patterns (Dweck, 1986) has revealed that boys’ motivation is less adaptive than girls’ (Bouffard, Vezeau & Bordeleau, 1998; McLellan, 2006; Meece & Holt, 1993; Roeser, Marachi & Gehlbach, 2002). Boys have also been found to have a less positive attitude to school (Barber, 1994; Gray & McLellan, 2006; Ireson & Hallam, 2005; Keys & Fernandes, 1993; MacBeath & Mortimore, 2001; Thomas, Smees, MacBeath, Robertson & Boyd, 2000) and overall boys do not achieve as highly as girls in public examinations (Arnot, Gray, James, Rudduck & Duveen, 1998; Younger, & Warrington, with Gray, Rudduck, McLellan, Bearne, Kershner & Bricheno, 2005a; Younger, & Warrington & with McLellan, 2005b).
Age Differences

Clear age differences have also been found. In particular Year 12 pupils have been found to be most positive of the three age cohorts assessed in terms of their sense of belonging to school. No comparable research, contrasting pupils beyond the compulsory age of schooling with those in mandatory schooling ages using the PSSM scale has been conducted. However the fact that Year 12 pupils are more positive is hardly surprising. Year 12 pupils have chosen to stay on at school so might be expected to identify more closely with the school than other pupils. They are also a more homogeneous cohort in terms of ability than they would have been when they were in Year 11, hence they are less likely to feel different and peers that they might have viewed as disrespectful may have left school. Furthermore, from a developmental perspective they may well have resolved some of the adolescent identity issues that younger pupils are still wrestling with (Erikson, 1968).

Comparing pupils in the compulsory years of schooling it would appear that Year 10 pupils are less positive about their overall sense of belonging than Year 8 but the two cohorts do not differ with respect to the other two belonging dimensions. Previous research using the PSSM scale in the States with elementary and junior high students has not demonstrated a decline in the sense of belonging with age (Goodenow, 1992; Hagborg, 1998), so our findings are not entirely congruent with this. However these studies have not examined the different facets of belonging and have only compared pupils in adjacent years of schooling, which may not provide a large enough a contrast. Furthermore the wider literature on pupil engagement documents a decline in motivation and attitudes towards school with age (Anderman & Maehr, 1994; Keys & Fernandes, 1993; MacBeath & Mortimore, 2001; Thomas et al., 2000). We would argue that the findings reported here extend our understanding of changes in different facets of sense of belonging with age, however we acknowledge that this study is cross-sectional and a longitudinal study would need to be conducted to investigate this area further.

(ii) Implications of the findings for SUPER schools

First of all it is clear from the distribution of scores that many pupils do not strongly feel they belong. Indeed the fact that two of the three distributions are symmetrical around the midpoint of the possible range of scores indicates that many pupils are fairly neutral or ambivalent about several facets of school belonging including general sense of belonging to the school community and respect, especially from peers. It is only on the dimension of feeling different that they tend to be more positive. Given the links between sense of belonging and other important educational constructs such as motivation and achievement (Goodenow, 1993a; Watkins, 2005), it is clear that the SUPER schools have been right to focus their attention on this area. However the fact that pupils have been more positive about not feeling different suggests that the SUPER schools should be more concerned about pupils’ general sense of belonging to the school community, including relationships with teachers and issues related to respect than helping pupils to feel they don’t stand out as different to their peers. Furthermore, the fact that a small number of pupils have indicated very negative perceptions about their sense of belonging on each of the three dimensions suggest that these pupils need to be identified and targeted for support.

The overall age and gender effects suggest that schools might need to consider differential interventions for particular groups of pupils; specifically targeting older pupils in the compulsory years of schooling (for instance Key Stage 4 pupils) rather than younger pupils.
and boys rather than girls. However it needs to be acknowledged that blanket generalisations may be unhelpful as clearly not all boys feel they don’t belong to school and not all girls feel that they belong, i.e. not all boys are the same and not all girls are the same (Younger et al., 2005b). Similarly not all Year 8 pupils feel they belong whilst not all Year 10 pupils feel they don’t belong.

Furthermore, whilst the age and gender effects found here can be located within the wider literature on pupil engagement, the fact that each school has their own profile demonstrates the fact that generalisations may not be that helpful for individual schools deciding how to target their interventions. As outlined in the findings above schools A and F had very different profiles. If the Senior Management Team at school A only looked at the overall findings they would probably be thinking of targeting Year 10, however as pupils in Year 10 in their school were actually more positive than pupils in Year 8, they would be better targeting Year 8 than Year 10. Similarly, the Senior Management Team at school F would be better off focusing on Year 10 girls than boys. Hence we back up the call made in other work (Gray & McLellan, 2006; Smees & Thomas, 1998) to consider the profile of individual schools rather than just an overall pattern when deciding how best to target interventions.

Clearly the methods used in this research have their limitations and can only provide a starting point for schools. The instrument is relatively limited in scope and further research is needed to document its psychometric properties. Quantitative survey data also does not allow any exploration of why students hold the perceptions documented, which would be key in deciding what action would be needed in a school to improve sense of belonging. It is therefore acknowledged that this data should not be used in isolation when deciding the most appropriate approach to take for an action research project to improve pupil engagement and for this reason focus group interviews were conducted with different groups of pupils in each school to explore the issues raised further. However, these two sources taken together, we would argue, can provide a secure base for an action research project and the next paper in this symposium will outline case studies of such interventions in two of the SUPER schools.

(iii) The broader issue of pupil engagement: reflections and questions

In reflecting upon these findings and considering the broader issues of pupil engagement, we conclude by noting some key issues and questions.

Having acknowledged the limitations of the survey instrument and the need for further research, we concur with Nystrand and Gamoran (1991:263) regarding the dangers of making assumptions about pupil engagement: ‘Engaged students do not all manifest their engagement in the same way . . . Manifestations of student engagement are sundry, ambiguous and elusive’. We agree with McFadden and Munns (2002:364) on the importance of finding out from pupils themselves if they are engaged or not:

It is students themselves who will be able to tell us that they are engaged [. . .] it is at the messy point of teachers and students responding to each other in relation to classroom discourse [. . .] where we are truly going to see whether or not students feel that school is for them.

Fredericks et al (2004:87) call for ‘more multi-method, observation and ethnographic studies’ noting that ‘current research sheds little light on the development or malleability of engagement’. In a similar vein, Appleton et al (2006:441) comment that ‘researchers have
speculated on the thresholds of engagement necessary for specific outcomes (e.g. Jimerson, Campos & Greif, 2003) yet whether specific or generalized engagement is more closely linked to important outcomes or whether they interact is an issue for future research to resolve.’

We also note research that challenges correlations between engagement and academic achievement. Zyngier (2008) in his critique of pupil engagement research reminds us of the PISA OECD study (Willms, Programme for International Student Assessment & Organisation for Economic Co-operation and Development, 2003) which drew on a survey of over 220,000 pupils in 8,364 school across 42 countries. One of the study’s robust findings was that ‘students’ sense of belonging and participation [. . .] are only weakly related to literacy performance’ (ibid, p.54) thus challenging assumptions that students who disengage from school also perform poorly on an academic level. The PISA study is another reminder of the need to treat student engagement as a complex multi-dimensional construct and that ‘there may be other processes, both in and out of school, that lead to student disaffection’ (ibid).

Zyngier (2008) also warns of the dangers of pupil engagement research becoming a discourse of pupil deficits and calls for the importance of recognising the key role schools and teachers have to play in actively contributing to engaging their pupils, in addition to recognition of socio-economic, race and gender factors. Interestingly, Irvin (2006) draws attention to the fact that for all the research on pupil engagement, to date little of it has explored it from teacher perspectives. How do teachers construe and facilitate pupil engagement? This would appear to be a surprising gap in the literature (as Irvin has found) and a fruitful area for further research.

In conclusion, our research in this area is a work in progress and as we move with the schools into the next phase of the project we will continue to investigate and reflect upon the research literature in conjunction with our findings. Pupil engagement is a complex issue which presents challenges for research. The survey reported in this paper has presented SUPER schools with a broad picture regarding aspects of engagement for some of their pupils. This has provided schools with a valuable starting point upon which to build more nuanced, finely grained and in-depth qualitative investigations to interrogate the survey findings further in order to shed more light upon key variables (Fredericks et al, 2004). For example, is it important to focus on engagement if there is no clear relationship with academic outcomes? It seems pertinent to call upon key questions which conclude the PISA report (Willms, 2003: 55) namely: ‘Does engagement matter? Can schools effect meaningful change, and if so, what policies and practices lead to higher levels of student engagement?’ Zyngier (2008: 1767) also challenges us to ask:

‘(i) which conception of engagement is most meaningful if we are intent on improving educational outcomes for all but in particular for students on the margins; (ii) what actually are the purposes of engagement; and (iii) who benefits (and gets excluded) from these purposes’.

Acknowledgements

We thank pupils, teachers and all members of the SUPER partnership for their participation and help with this study.
References


Barber, M. (1994) *Young People and their Attitudes to School: An interim report of a research project in the centre for successful schools*. Report for Keele University (Keele)


APPENDIX

<table>
<thead>
<tr>
<th>SUPER PSSM Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
</tr>
<tr>
<td>Q2</td>
</tr>
<tr>
<td>Q3</td>
</tr>
<tr>
<td>Q4</td>
</tr>
<tr>
<td>Q5</td>
</tr>
<tr>
<td>Q6</td>
</tr>
<tr>
<td>Q7</td>
</tr>
<tr>
<td>Q8</td>
</tr>
<tr>
<td>Q9</td>
</tr>
<tr>
<td>Q10</td>
</tr>
<tr>
<td>Q11</td>
</tr>
<tr>
<td>Q12</td>
</tr>
</tbody>
</table>

This document was added to the Education-line database on 15 September 2008