

## **Report of the Madras College Co-location Working Group**

### **Members**

Professor Alyson Tobin (Convenor) Dean of the Faculty of Science, University of St Andrews

Mr Kenneth Greer, Executive Director of Education, Fife Council

Professor Jack Jackson former HMIE Assistant Chief Inspector with national responsibility for science

Mr Ian Jones, Rector Madras College, St Andrews

Dr Lisa Jones, Director of Teaching in Philosophy, University of St Andrews

Mr John McLaughlin, Education Officer, Fife Council

Professor David O'Hagan, Professor of Organic Chemistry, University of St Andrews

Cllr Robin Waterston, Vice-Chair, Education & Children's Services Committee, Fife Council

### **Summary**

This report presents a number of opportunities for school-university collaboration that would be provided by the co-location of a new Madras College within the campus of the University of St Andrews. It identifies several key areas for development, focussing on the Sciences, Arts and Social Sciences, with opportunities for:

- increased sharing of best practice in teaching and learning across sectors
- enhancement of school-university transition
- provision of an authority-wide and national focus for science learning
- support for pupils and students with additional support needs
- sharing of research projects and outcomes
- integration of sports and conference facilities
- continuing professional development (CPD) in science.

This relationship between a University and a secondary school would be unique to Scotland and could serve as a model for further collaborations of this kind between schools, universities, colleges and industry.

May 2009

## **Co-location will provide unique opportunities for school-university collaboration**

The physical co-location of Madras College and the University of St Andrews provides a number of unique opportunities. Co-location will act as the catalyst to establish closer and more permanent working arrangements between the secondary and Higher Education sectors, serving as a model for future school-university collaborations in Scotland.

Madras College enjoys a reputation for attainment and achievement in its widest sense. This sits well within the ethos of the University. Higher education is the preferred destination for a high proportion of Madras pupils. Setting the school within the University campus is likely to increase that number, as pupils gain confidence from being educated within the University environment.

The new Madras College will be a school designed to deliver the highest quality of education for the 21<sup>st</sup> century. The building will provide facilities that will enhance those already in existence on the University campus and will provide modern, flexible teaching, learning and meeting spaces that can be shared with the University.

Formal and informal links already exist between the University and school subject departments (see Appendix)<sup>1</sup>. Physical co-location will enhance significantly these links, particularly in the pure and applied sciences and sports. Sharing facilities and developing a better understanding of the work in each sector coupled with the ease with which teaching staff from both institutions can interact will promote a common understanding and enhance the quality of learning and teaching. The use of University students as mentors and as peer tutors will prove an easy and mutually beneficial scheme, easily delivered on the shared campus.

The development of Curriculum for Excellence will impact significantly on schools throughout Scotland over the next few years. Changes will be made in the curriculum itself, its delivery, assessment and qualifications structure. The principles and purposes of Curriculum for Excellence sit well across all sectors and closer collaboration between sectors would help to ensure that all pupils and students aspired to be successful learners, confident individuals, responsible citizens and effective contributors. The development of Curriculum for Excellence<sup>2</sup> with its emphasis on cross-curricular working and the need for pupils to work in a thematic manner fits well with the principle of co-location. It is not solely in the upper school that collaboration will be important. As pedagogy and content change it is important that enduring links are established that will develop a common understanding to enhance transition from school to university, to the benefit of pupils and students alike. Additionally, in recognition of the national concern regarding teaching and learning in science, particularly at the 9-14 age range<sup>3</sup>, co-location would provide a real opportunity for active learning for pupils within the primary as well as the secondary sector in North East Fife. The opportunities for continuing professional development (CPD) and refreshing of skills and knowledge in science education, for both primary and secondary school staff, would be significantly enhanced.

The University of St Andrews and the Education service of Fife Council share a common agenda on the inclusion of all learners. Co-location will enable the development of closer practical links on a range of learning support activities. For example, the excellent work carried out at the University's Student Support Services<sup>4</sup> and Alternative Format Suite<sup>5</sup>, to support students who are sight impaired or dyslexic, can be incorporated into the work at Madras College. Similarly, such activity also provides opportunities for pupils and students to contribute to meeting the needs of

those in either setting who have additional learning needs. This can incorporate the use of volunteer students to work directly with additional support needs (ASN) pupils in schools, and the use of senior pupils to support students at University who have particular needs.

### **Co-location provides opportunities to develop science education across the sector**

The Faculty of Science at St Andrews is one of the foremost for teaching and research in the UK<sup>6</sup>. The development in quality over the last decade has been accompanied by substantial investment at the North Haugh campus; Chemistry, Physics & Astronomy (including the observatory), Mathematics & Statistics and Computer Science are all located there, along with the Centre for Biomolecular Sciences (Biology and Chemistry), and new buildings for the Medical Sciences and the Energy Research Centre. These new developments exemplify the University's ongoing commitment and ambition in developing its status as internationally leading in science research and in research-led education in the sciences.

The St Andrews environment is ideal for nurturing a new generation of science-literate adults and for promoting greater interest in careers in science. The high level focus on scientific research and scholarship across the University, coupled to the co-location of a major secondary school, offers a unique opportunity to identify and promote effective teaching and learning practices across the sciences at all levels. The school science department would act as a focus for disseminating best practice across local primary and secondary schools, providing support and challenge as necessary. Co-location will also facilitate CPD across school-university sectors, with shadowing of staff, access to University lectures and modern teaching laboratories, and opportunities for workshops and shared resources. It is envisaged that the Madras site could serve as a model for other school-university collaborations in Scotland, taking successful elements from the 'Magnet schools' model in the USA<sup>7</sup>, and the specialist academies, specialist schools and higher education and schools partnerships models elsewhere in the UK<sup>8</sup>. The recently introduced Scottish Science Baccalaureate would also benefit greatly from the co-location since this would facilitate closer working relationships between sectors with the potential for sixth year students to spend some of their time working on their interdisciplinary project in nearby university departments.

The development of collaborative arrangements between Madras staff and key members of University is attractive to both parties. The academic community continues to value and develop its interactions with schools and school teachers, and the University science community is keen to extend its contribution to on-going curriculum development.<sup>9</sup> The longer-term and more ambitious prospects of creating a Scottish Science Centre for CPD on the University campus, similar to the National Science Learning Centre in York<sup>10</sup>, emerges. St Andrews would be an excellent site for such a project, with the opportunity it presents for enhancing its already strong links to the Scottish Schools Equipment Research Centre<sup>11</sup> and the Dundee Science Centre (Sensation)<sup>12</sup>.

### **Educational links within the arts and social sciences community**

Co-location would present opportunities for staff-student mentoring across the sector, providing support and CPD for subjects across the Arts and Social Sciences. Collaboration could prove especially fruitful for University students in social science subjects (such as psychology, anthropology, international relations etc.) working on projects that call for observations of school settings and behaviours. In return,

Madras pupils and teachers would obtain an insight into such studies, and pupils could benefit from the contact with University students, as they have already experienced through the Undergraduate Ambassadors Scheme for science undergraduates at St Andrews<sup>1</sup>.

Co-location provides an opportunity for staff and pupils to experience subjects in the Arts and Social Sciences not normally taught (or only recently introduced) in the secondary school sector, such as philosophy, psychology, anthropology, sustainable development, management and international relations. Teachers could benefit from University-led master-classes, seminars and other forms of CPD, while pupils could visit lectures and laboratory classes to see what such subjects entail and how the subjects are taught at University level. These collaborations would further aid the long-recognised challenge of easing the transition from secondary to university<sup>13</sup>, especially for students encountering subjects that they have not studied at school.

Enhanced school-university links would provide new opportunities for the dissemination and sharing of University research. For example, Psychology projects often call for surveys drawn from cross-sections of society or from particular social groups. Participation by Madras pupils and teachers in such studies would lead to *quid pro quo* benefits, e.g. learning about the significance of such studies, gaining first-hand experience of research and learning about research methods (e.g. statistical sampling practises). Outcomes of research could be shared through working groups established between university researchers and teachers, where the school could be given direct access to research expertise and advice in areas that might prove especially pertinent, e.g. psychology expertise with respect to issues affecting secondary schools, such as bullying, truancy, etc. The collaboration would be mutually beneficial, with teachers learning about the latest research and academic researchers discovering more about the dissemination and implementation of new practises in secondary education.

Note that these examples have only considered a few academic subjects; other arts subjects such as English, Modern Languages, Music and Drama will provide many more instances for synergetic development. Of particular interest is the development of the Baccalaureate in Languages and Science with their emphasis on interdisciplinary projects. This is an ideal area for collaboration with pupils potentially able to access a large range of resources that would be supportive of such projects.

It should be recognised that the above examples for Arts and Social Sciences do not themselves directly require co-location; the support is rather indirect, working on the assumption that co-location would engender a close link between the two institutions that would be beneficial in the ways outlined above.

### **Library support**

The University currently provides access to its library in North Street to S6 pupils at Madras and Bell Baxter. Co-location provides opportunities for a wider access to University library facilities, whereby Madras pupils could benefit from the expertise of library staff in researching electronic resources and developing information literacy skills for use both in school and for eventual transfer to a higher education study environment. An increasing challenge to school pupils and students is to identify good, reliable and verifiable sources of information from the ever-expanding internet. Shared teaching, demonstration of electronic search-engines and databases through access to library workshops for teachers, pupils and students, would serve to improve 'digital literacy' for all participants.

### **Sports facilities**

The University has high quality rugby, hockey and football facilities and intramural gymnasium arenas. Co-location would enable creative sharing of facilities to the benefit of both parties as well as the local community. Shared resources and a greater number of users would enable the two partners to raise their ambitions for the improvement of current and acquisition of future key facilities. Pupils at Madras would also have access to facilities and sports that are not currently taught within the school. A single site would provide a sporting focal point for the community, with classes and activities for school, University and public participation. Ready access to lecture theatres as well as to sports facilities would enhance the opportunity for sports education. A very promising area for development would be in training sports coaches; the University hosts a number of coaching courses on behalf of National Governing bodies and it organises 52 different sports clubs within the Students' Association. Coaching opportunities for Madras pupils, through collaboration with these University clubs and external coaches could provide an exemplar for training the next generation of sports coaches in Scotland.

### **Enhancing the University conference facilities.**

The University of St Andrews offers an attractive venue for a wide range of academic conferences and conventions and such activity is important to the academic life of the University. Conferences provide an important income stream to the University particularly during the summer months. New Hall residences situated on the North Haugh contains most of the University's high quality conference accommodation and is a key conference location. However the largest lecture theatre on the North Haugh has a capacity of only 400. A modern school hall facility, appropriately designed with flexible seating and open areas is attractive. With a capacity of ~600 such a hall could clearly double as a unique facility for Plenary conference and large poster sessions. This would enable the University to continue to host major events and to pursue a more ambitious conference agenda as it builds towards its 600<sup>th</sup> anniversary celebrations. It would also further enhance the opportunity for CPD and schools conference events at a national level.

## Appendix: comments, sources and references

1. There are numerous formal and informal collaborations between the University of St Andrews links with Madras College. A sample includes:

a) participation in the Undergraduate Ambassador's Scheme ([www.uas.ac.uk](http://www.uas.ac.uk)) where final year science undergraduates work for 25 hours alongside a teacher mentor to develop their communication and teaching skills in a module that carries 15 credits towards their degree. Students in Mathematics, Physics, Geography, Biology and Chemistry have worked at Madras through this programme

b) hosting visits of Madras pupils to lectures (Stem Cell Research, Geosciences and Chemistry Christmas Lectures), laboratory classes (Royal Society of Edinburgh Masterclasses in Sciences, Nuffield summer bursaries and projects) and University visits (Bell Pettigrew museum of natural history).

c) University events and conferences: 'Chemistry at Work', Chemistry Masterclass, Tayside Universities and Schools Liaison Group (TUSLIP) **Day of Physics** for S6 pupils, Biology 'Taster days' for local secondary schools, Chembus, Astronomy Roadshow, Space School, Teachers' Together schools, Annual Spanish Teachers' Conference, Museum Collection Unit's Teachers Focus Group, Classics Higher Conference, Philosophy Support Day for Teachers

2. Curriculum for Excellence: Scotland's new curriculum  
<http://www.ltscotland.org.uk/curriculumforexcellence/>

3. Quality and Equity of Schooling in Scotland (2007) OECD Review of National Policies for Education. ISBN 9789264041004

4. University of St Andrews Student Support Services website  
<http://www.st-andrews.ac.uk/sss/>

5. Case study of the University of St Andrews Alternative Format Suite  
<http://www.altformat.org/index.asp?pid=250>

6. 2008 Research Assessment Exercise <http://www.rae.ac.uk/>

7. Magnet Schools USA <http://www.magnet.edu/>

8. Department for Children, Schools and Families <http://www.dcsf.gov.uk/> and the Specialist Schools and Academies Trust <http://www.specialistschools.org.uk/> websites provide links to further information

9. University academics regularly contribute to curriculum development in secondary and tertiary education through membership of organisations such as the Scottish Deans' group, Biosciences Federation, Institute of Physics, Royal Society of Chemistry, and The Royal Society of Edinburgh.

10. National Science Learning Centre, York  
<http://www.sciencelearningcentres.org.uk/WebPortal.aspx?page=2>

11. Scottish Schools Equipment Centre <http://www.sserc.org.uk/>

12. Sensation (Dundee Science Centre) <http://www.sensation.org.uk/>

13. Enhancement Themes (partnership between QAA Scotland, Higher Education Academy, Universities Scotland, Scottish Funding Council. First Year Experience Theme reports on school-university transition:  
<http://www.enhancementthemes.ac.uk/themes/FirstYear/default.asp>