



Australian Council of Deans of ICT

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6 May 2014

Dear Professor Joshi,

Mathematical Sciences Decadal Plan and ICT

Thank you for your letter of 8 April 2014 where you outline broadly the Mathematical Sciences Decadal Plan and request comments concerning the reciprocal relationship between ICT and Mathematical Sciences.

We are most concerned with aligning the ICT and Mathematical Sciences curricula. As a starting point with far reaching implications, I would suggest including the topics used by Computer Science Unplugged (<http://csunplugged.org/activities>) in the school curriculum. Most of the topics are equally important to ICT and Mathematics, and the topics and activities given can be adapted to a wide range of age groups. Including these concepts that are common to Mathematics and ICT would demonstrate and strengthen the relation between the disciplines.

To help students appreciate Mathematics and ICT working together in practical ways, many examples can be used such as face recognition on social networks or self-driving cars. An area that can help improve the perception and relevance of Mathematics is in the modeling of finite state machines which are in our surroundings and everyday usage. These state machines largely originated from computer science and involve concepts relevant to both ICT and Mathematics. The explicit recognition of this relationship would help students develop thinking in these areas.

At the high end, I note that there are research activities and publications on the interface between Computation and Mathematics (e.g., LMS Journal of Computation and Mathematics (<http://www.lms.ac.uk/publications/jcm>); and EPSRC concerning new connections between Mathematical Sciences and ICT (<http://www.epsrc.ac.uk/research/ourportfolio/themes/ict/introduction/workingtogether/Pages/default.aspx>), including an Action Plan devised in 2010 and revised in 2013 (<http://www.epsrc.ac.uk/SiteCollectionDocuments/other/ReviewOfProgressAgainstActionPlanApril2013.pdf>)).

I appreciate the effort and complexity in designing an integrated Mathematics and ICT curriculum, including the change management processes required and I will be happy to discuss this further.

Sincerely,

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