CASE STUDY FROM CHISWICK HOUSE SCHOOL, MALTA: LEADING IMPACTFUL CHANGE TOWARDS MATHS MASTERY

Bernie Mizzi & Esmeralda Zerafa
Number of children in Malta (Aged 5-16): 48,125 - 100%
State schools: 27,200 - 57%
Church: 15,050 - 31%
Independent: 5,854 - 12%
CHSMC: 2% of Total
18% of Independent Schools NSO 2015/16
Chiswick House School and St Martin’s College are a professional learning community. Building on our successful past, we are collectively committing to 21st Century learning-centred education to become the best we can be.

Our high standards of teaching for learning are embedded within an enquiry-based, knowledge-rich and inclusive environment. We plan stimulating and active learning experiences that arouse curiosity and fire the imagination. By developing emotional intelligence, encouraging effective communication and critical thinking, learners become responsible and autonomous. Every member of the community aspires to be a collaborative and creative lifelong learner able to confidently face new challenges in a fast-changing world.

http://chs.edu.mt/school-information/our-school/
EVERY LEARNER.
EVERY DAY.
WHATEVER IT TAKES.

Jimmy Casas – Culturize (2016)
OECD 7 Principles of Learning

- Learners at the Centre
- Social Nature of Learning
- Emotions are Integral
- Recognising Individual Differences
- Stretching All Learners
- Assessment for Learning
- Building Horizontal Connections
Eight 21st Century Skills/Ways of Being

- Communication
- Collaboration
- Critical Thinking
- Creativity
- Compassion
- Confidence
- Commitment
- Contribution (added in 2018/19)
Growth Mindset

- Embrace Challenge
- Persist in the face of setbacks
- See effort as the path to mastery
- Learn from criticism
- Find lessons and inspiration in the success of others
Tablets of Stone

1. A Robust Policy Framework
2. Inspirational and Informed Leadership for Learning
3. Solid School - Community Relationships
4. Inclusive and Broad-based Curriculum with valid and reliable assessment practices
5. Religious Beliefs and Multi-Cultural Celebration - a positive school climate generating a sense of belonging
6. Professional Learning
7. Accountability, Transparency and Sustainability
Maths Mastery at Chiswick House School

https://www.facebook.com/watch/?v=911385359025205
CHS School Improvement Process 2016/2017

1.0 Inspirational Teaching and Learning Opportunities for all learners

1.1.0 Promoting 21st Century Learning by Implementing 7+7: Inspirational Learning Opportunities

1.1.1 Developing Communication, Collaboration, Critical Thinking and Creativity + Compassion, Confidence and Commitment

1.1.2 Translating the 7 Principles of Learning into practice; Learners at the Centre; Social Nature of Learning; Emotions are Integral; Recognising Individual Differences; Stretching all Students; Assessment for Learning; and Building Horizontal Connections

1.1.3 Launch the Teaching & Learning Project

1.1.4 LOF Training: Learning Schemes and Assessment

1.1.5 Intercultural Awareness

1.2 Inspirational Curriculum

1.2.1 Introduction of Maths Mastery L1-5

1.2.1.4 English Writing and Reading Skills further developed (Spelling + Handwriting) + Follow-up Plans

1.2.5 Full Time Librarian (Library Promoter) recruited and role developed

2.0 Inspirational Learning Spaces

2.1.1 Primary - New School for CHS

2.1.2 New Timetable for L1-5

2.1.3 Visual Ef. upgrade and Review

2.2 Tables for all 4 Grades and teachers

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CHS School Improvement Process 2017/2018

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1.1.4 LOF Training: Learning Schemes and Assessment

1.1.5 Intercultural Awareness

1.2 Inspirational Curriculum

1.2.1 Deepening the Maths Mastery Experience

1.2.3 Whole CDMC Review of Science Curriculum

1.2.4 English Writing and Reading Skills further developed (Spelling + Handwriting) + Follow-up Plans

2.0 Inspirational Learning Spaces

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THE CHANGE PROCESS

DESIGN THINKING APPROACH MODIFIED

1. Question
2. Empathise
3. Define
4. Ideate
5. Prototype
6. Test
7. Reflection

STEPS
Question and Wonder

- What is international research telling us about the best way forward in Mathematics Education?
- Which approach should CHSMC implement going forward?
Empathise

As Maths Lead:

- I chose to teach Maths to Level 3 pupils (aged 7) to experience and to model for others
- I identified the areas for development that were in the maths department e.g. lots of rote learning, minimal use of resources and limited problem solving
Define

- Local situation for Mathematics was uncertain
- I started researching and looking at different textbook schemes
- Linked my reading about different pedagogies for mathematics through my doctorate to this context
- Attended Dr Ban Har's 3-day training
Decided that CHS has to join the maths revolution! Had to persuade teams and wanted to start a whole school change.

The change at CHS brought about a National change too.
Prototype

- Tested the maths mastery approach in my own class (in Level 3)
- Convinced the SLT
- Convinced the Maths Level Leaders (L1 – L5)
- Convinced the Teachers through my own practice and modelled the approach
- Held workshops for parents before the start of the school year as well as during the year

IN VOLVING CHSMC COMMUNITY IN THE CHANGE PROCESS
Test

- Weekly feedback from stakeholders - parents, teachers and pupils and made any necessary changes
- Evaluated impact through data analysis
- 360 degrees survey - asked parents for feedback through a questionnaire

INVolVING CHSMC COMMUNITY IN THE CHANGE PROCESS
Reflection

- Constant reflection on practice to keep improving
- Monitoring pupil progress
IMPACT

Impact on the International & National Community: Our Horizontal Connections

- International Model School for MNP!
- Visit from Minister and Leaders from State schools
- Numeracy Leaders from Church schools carried out job shadowing at CHS for a school term
- Visit from Leaders, Heads and Teachers from Church schools
- Training for NQTs
- Asked the Minister to put together a National Strategy for Mathematics

INVolving CHSMC COMMUNITY IN THE CHANGE PROCESS
IMPACT

- Results from CATs
- Results from Level 2 standardised test
- Spread of skills related to maths mastery to other curricular areas

LEARNERS
Level 3 CAT Scores

June 2017

Distribution of scores for all students (by battery) compared with those for the national sample
Level 5 CAT Scores
February 2019
Level 3 CAT Statistics
June 2017

School: Chiswick House School
Group: Level 3
Period of testing: 21/06/2017 – 26/06/2017
Level: Pre-A
No. of students: 99

Group analysis (by battery)

The table below shows mean (average) scores for all students compared with those for the national sample.

<table>
<thead>
<tr>
<th></th>
<th>Verbal mean SAS</th>
<th>Quantitative mean SAS</th>
<th>Non-verbal mean SAS</th>
<th>Spatial mean SAS</th>
<th>Overall mean SAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>National average</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>All students</td>
<td>103.7</td>
<td>104.6</td>
<td>105.3</td>
<td>108.2</td>
<td>105.5</td>
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Level 5 CAT Statistics

February 2019

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<tr>
<td>All students</td>
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<td>107.2</td>
<td>106.5</td>
<td>108.1</td>
<td>107.0</td>
</tr>
<tr>
<td>90% confidence band</td>
<td>104.2–107.8</td>
<td>105.2–109.1</td>
<td>104.5–108.4</td>
<td>106.0–110.3</td>
<td>105.3–108.7</td>
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</table>
## Level 2 Numeracy Progress Test

<table>
<thead>
<tr>
<th>Category</th>
<th>Below Age Expected Progress</th>
<th>Age Expected Progress</th>
<th>Exceeding Age Expected Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 (9 SEN)</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9% (8% SEN)</td>
<td>48%</td>
<td>44%</td>
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</table>
Results from the 360 survey about Maths

**Singapore Maths: 76% of Parents believe that it has made their child more competent & 67% believe it has improved their child’s attitude towards Maths.**

**CHS Parents: Perceptions of Singapore Maths, 2018**

- **Competence in Mathematical Computations and Concepts**
  - Level 1: 11%, 39% more competent, 50% no change, 7% less competent.
  - Level 2: 7%, 25% more competent, 41% no change, 27% less competent.
  - Level 3: 8%, 15% more competent, 58% no change, 19% less competent.
  - Level 4: 8%, 14% more competent, 33% no change, 35% less competent.
  - Level 5: 13%, 20% more competent, 34% no change, 17% less competent.
  - All levels: 6% more competent, 31% no change, 22% less competent.

- **Improvement in Attitude Towards Mathematics**
  - Level 1: 17%, 35% more enthusiastic, 40% no change, 28% less enthusiastic.
  - Level 2: 13%, 25% more enthusiastic, 41% no change, 27% less enthusiastic.
  - Level 3: 15%, 24% more enthusiastic, 36% no change, 36% less enthusiastic.
  - Level 4: 6%, 31% more enthusiastic, 39% no change, 25% less enthusiastic.
  - Level 5: 15%, 17% more enthusiastic, 35% no change, 35% less enthusiastic.
  - All levels: 10% more enthusiastic, 22% no change, 37% less enthusiastic.

*Source: CHSMC Quantitative Research, CHS Parents, Levels 1 to Levels 5, n=251, June 2018*
IMPACT

- MNP! Professional Learning Opportunities for all teaching/support staff
- Helped with the development of an outcome based framework
- Changed mathematics at secondary level too
- Growth mindset approach introduced
- Improved questioning techniques
- Consolidated an inquiry-based approach

TEACHERS
IMPACT

- SIP 2018-2019
  - Working towards collaborative professionalism
  - Extended the NACE Project at CHS
  - Introduced the NACE Project at SMC

LEADERSHIP
1. AT CHSMC WE FOCUS ON THE BCs
Communication - Confidence - Critical Thinking - Commitment - Compassion - Collaboration - Creativity - Contribution.

Particular attention this year will be placed on improving communication and enriching commitment.

2. CURRICULUM

b. Improve Teaching and Learning Strategies - focus on 21st Century learning strategies and learning through inquiry.

3. LEARNING CAPITAL

Drawing on human capital in our community
Young Learners (all students) and Adult Learners (parents, staff and alumni) - grow through developing a growth mindset and implementing collaborative professional development.

Evaluate Assessment Practices - focus on the quality of evidence, the quality of feedback and the impact on learners.
The 10 Tenets of Collaborative Professionalism

1. Collective Autonomy
2. Collective Efficacy
3. Collaborative Enquiry
4. Collective Responsibility
5. Collective Initiative
7. Joint Work
8. Common Meaning and Purpose
9. Collaborating with Students
10. Big Picture Thinking for All

Hargreaves & O’Connor (2018)
Chiswick House School – NACE Challenge Award

https://www.facebook.com/ChiswickHouseSchool/videos/584008168705373/
THANK YOU

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