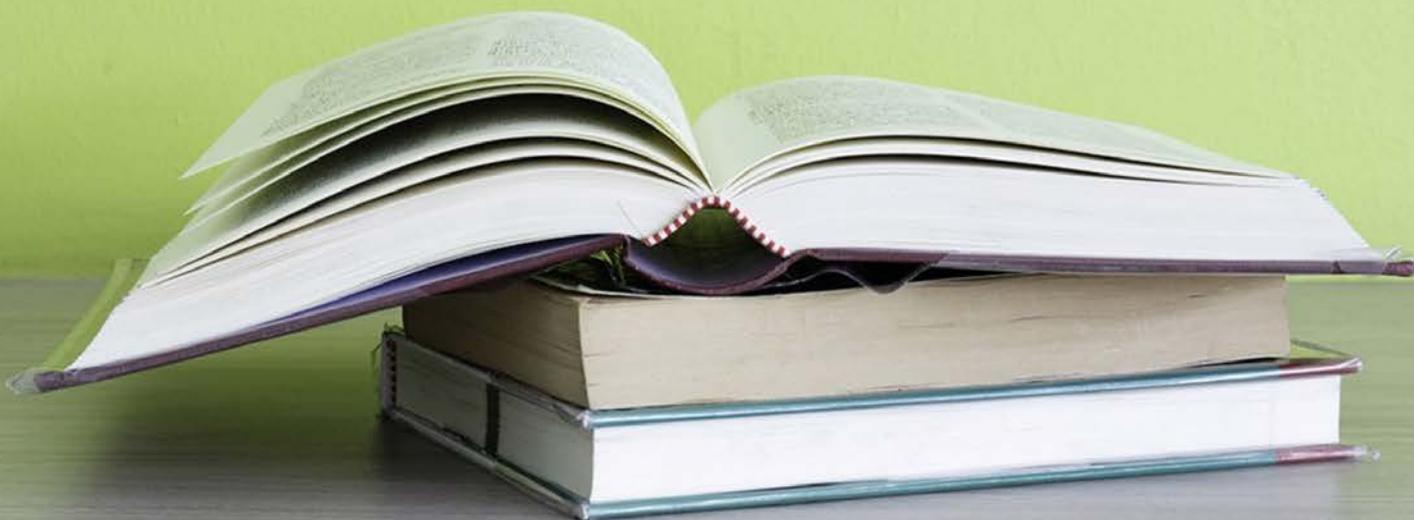


# School Based Research Project

## Final Report

The effect of two interventions  
on high ability underachievers

Inaburra School



*The Effect of Two Interventions on  
High Ability Underachievers*

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## Executive Summary

### ***Background***

Inaburra School is an independent, Christian, K-12 comprehensive school in the southern suburbs of Sydney. It has a student population of approximately 1000 students. Since its inception, there have been some proficient students who have enrolled, and while many of them are academically achieving compared to their cohort, there are also a number of them who are not. More recently, a cluster of them were identified and since the employment of a staff member trained in gifted education, it was decided that a study addressing the needs of these underachieving gifted would be timely and profitable.

The literature review conducted provided the main feature of the study, that of introducing an intervention through the student body rather than asking teachers to learn another educational strategy for helping the high ability students within their classrooms.

### ***Aim***

This project studied the effect of using biographies as Bibliotherapy (environmental perceptions) and differentiation techniques of the Maker Model (goal valuation/ task meaningfulness) to counter underachievement in a group of identified high ability underachievers at Inaburra School; in particular, Years 7 and 9. This ultimately involved training students from Years 7 to 10 over a two-year period.

### ***Research question***

The research question for the study was *Would Bibliotherapy and/or differentiation techniques be sufficient to reverse underachievement in high ability students?*

Though there has been a range of articles written about Bibliotherapy and its benefit with gifted students assisting them to gain insight into their own areas of giftedness; there has been little research to date on the use of Bibliotherapy with high ability students for the purpose of reversing underachievement. There has also only been one study into the use of the Achievement-Oriented Model (AOM) with high ability underachievers in the US (Ritchotte, Matthews & Flowers, 2014). This project is the first study in Australia into the use of the AOM and Bibliotherapy with high ability underachievers. The AOM was proposed

by Siegle and McCoach in 2005 to explain why high ability students underachieve. A study by Ritchotte, Matthews and Flowers (2014) suggests that the model may have validity in its use to develop interventions to address the needs of high ability underachievers. According to the AOM, high achieving students find school useful (goal valuation), the environment supportive (environmental perceptions), and perceive themselves to have ability to perform academic tasks (self-efficacy), all of which leads to motivated students who self-regulate and are engaged in their learning, all of which is supported by Hattie's (2009) meta-synthesis.

### ***Methodology***

The project was an action research case study utilizing a quasi-experimental approach to subject identified high ability students in a year group to training in a strategy and chart any changes in behaviour and learning outcomes by pre and post testing them. Participants were identified using the Cognitive Ability Test (CogAT) and Progressive Achievement Tests (PAT) in comprehension and mathematics scores as well as teacher observations.

Students were trained to use the Maker Model (Maker, 1982) and Bibliotherapy in several sessions and then required to incorporate one of these interventions to help enhance and challenge their own learning in the classroom. Students in the project were supported individually in short visits to the classroom and as a group in one of their lessons or at lunchtime to extend their own learning based on their area of passion. The project for each cohort lasted approximately 10 weeks, with Year 9 starting in Term 1 and Year 7 starting in Term 3.

As students developed skills in applying the components of Maker Model or Bibliotherapy, their interest in learning have increased. This was also encouraged by group meetings (online and face to face) to share experiences and for data collection purposes.

Analysis of the data was achieved using the IBM SPSS Statistics package.

### ***Results***

Students showed improvement in areas of the AOM depending on the intervention chosen. In general, students using the Maker Model improved in their attitude to teachers

( $d=.16$ ,  $p=.03$ , 1 tailed), and to school ( $d=-.08$ ,  $p=.03$ , 1 tailed) while students using Bibliotherapy did not show significant results. However, correlation analysis suggests significant relationships between the chosen intervention and student perception of academic capacity ( $r=.31$ ,  $p<.01$ , 1-tailed), attitudes to school ( $r=.43$ ,  $p<.01$ , 1-tailed) and teachers ( $r=.33$ ,  $p<.01$ , 1-tailed), goal valuation ( $r=.25$ ,  $p<.01$ , 1-tailed), motivation ( $r=.18$ ,  $p<.05$ , 1-tailed) and all three types of self-efficacy measures, academic, social and emotional ( $r=.43$ ,  $.32$ ,  $.33$  respectively,  $p<.01$ , 1-tailed). Academic self-perception showed strong positive correlations with student attitudes to teachers ( $r=.62$ ,  $p<.01$ , 1-tailed) and school ( $r=.58$ ,  $p<.01$ , 1-tailed), goal valuation ( $r=.73$ ,  $p<.01$ , 1-tailed) and motivation ( $r=.69$ ,  $p<.01$ , 1-tailed), moderate positive correlations with academic self-efficacy ( $r=.35$ ,  $p<.01$ , 1-tailed), and weak positive correlations with social ( $r=.23$ ,  $p<.01$ , 1-tailed) and emotional self-efficacy ( $r=.22$ ,  $p<.01$ , 1-tailed).

While there were no significant results from Bibliotherapy, the effect sizes in students' academic self-perception ( $d=.10$ ,  $p=.34$ ,  $df=13$ ), goal valuation ( $d=.12$ ,  $p=.28$ ), and academic self-efficacy ( $d=.11$ ,  $p=.22$ ,  $df=13$ ) suggests that there are small practical significant improvements for these factors.

The independent t-tests suggest that the Maker Model and Bibliotherapy were not significantly different from each other in terms of effectiveness. However, there were small effect sizes suggesting that Bibliotherapy was more effective than the Maker Model in improving attitudes to teachers ( $M=.29$ ,  $SE=1.61$ ,  $p>.05$ ,  $d=.15$ ), goal valuation ( $M=1.79$ ,  $SE=3.04$ ,  $p>.05$ ,  $d=.18$ ) and academic self-efficacy ( $M=.79$ ,  $SE=1.00$ ,  $p>.05$ ,  $d=.14$ ).

Overall, the data shows that there may be positive results from using the Maker Model and Bibliotherapy as interventions to support high ability underachievers. When the academic achievement reports were compared with randomly selected non-participants, an average of 37.5% students using Bibliotherapy, 35.75% of students using the Maker Model and an average of 44.5% randomly selected non-participants improved in the subjects of English, Mathematics, Science and HSIE (History or Geography). While IGNITE students did not outstrip the non-IGNITE students, there were still comparable growth.

### ***Conclusions and recommendations***

Identification appears to increase academic self-efficacy for many of these underachievers which supports Ritchotte, Suhr, Alfurayh & Graefe's study (2016). Students were empowered by the student agency involved in the use of Maker Model strategies. According to the AOM (Siegle & McCoach, 2005), high achieving students find school useful (goal valuation), the environment supportive (environmental perceptions), and perceive themselves to have ability to perform academic tasks (self-efficacy), all of which leads to motivated students who self-regulate and are engaged in their learning. This study supports many of the AOM's assertions, in particular, environmental perceptions and goal valuation. These factors were shown to correlate with motivation, suggesting that the AOM provides a good framework to explain underachievement in high ability students.

Year 7 students appeared to be more accepting of using the strategies shown than Year 9 students. This would suggest that the earlier students were exposed to the interventions, the more likely the students begin strategies to reverse underachievement.

The interventions, Maker Model and Bibliotherapy, should be used concurrently to produce holistic students and reduce underachievement in high ability students as they appear to target different factors in the AOM. When the application of these two inventions are working together, the full extent of the AOM can be achieved.

# The Effect of Two Interventions on High Ability Underachievers

## *Background*

Inaburra School is an independent, Christian, K-12 comprehensive school in the southern suburbs of Sydney. It has a student population of approximately 1000 students with a similar quantity of male and female students. Since its inception, there have been some able students who have enrolled, and while many of them are academically achieving, there are also a number of them who are not. More recently, a cluster of them were identified in Year 9 and since the employment of a staff member trained in gifted education, it was decided that a study into addressing the needs of these underachieving gifted would be timely and profitable.

Teachers had begun to identify a cluster of fifteen Year 8 students in 2014 who were not performing to their potential. This was brought to the attention of the newly appointed Head of Learning Enrichment. Testing was carried out on three students who were identified as underachieving gifted. A pilot study was carried out early in 2016 with these Year 9 students and some anecdotal successes led to a study with the possibility of training a whole cluster to use an intervention model to support and perhaps provide some guidelines to assist their learning.

After applying and succeeding in gaining the AISNSW grant, work began in earnest to train these students in the use of Bibliotherapy and Maker Model (Maker,1982).

There has been little research to date on the use of Bibliotherapy with high ability students for the purpose of reversing underachievement. There has also only been one study into the use of the Achievement-Oriented Model (AOM) with high ability underachievers in the US (Ritchotte, Matthews & Flowers, 2014). This project is the first study in Australia into the use of the AOM and Bibliotherapy with high ability underachievers. The AOM was proposed by Siegle and McCoach in 2005 to explain why high ability students underachieve (see Fig. 1). The study by Ritchotte, Matthews and Flowers (2014) suggests that the model may have validity in its use to develop interventions to address the needs of high ability underachievers. According to the AOM, high achieving students find school useful (goal valuation), the environment supportive (environmental perceptions), and perceive themselves to have ability to perform academic tasks (self-

efficacy), all of which leads to motivated students who self-regulate and are engaged in their learning, all of which is supported by Hattie's (2009) meta-synthesis.

### *Literature Review*

The definition of gifted is informed by the definition adopted by the NSW Department of Education (DEC), namely Gagne's (2004) DMGT. In it, a gifted student who is not fully engaged in the developmental process may not achieve his/her potential and is therefore underachieving in one or more areas. There are many reasons as to why the student may be underachieving, which is explained by the environmental and intrapersonal catalysts. In fact, gifted underachievement can be considered as a 'chronic phenomenon' which cannot be fixed without appropriate interventions (Colangelo, Kerr, Christensen & Maxey, 1993).

While the school and family may provide positive influence, the intrapersonal catalysts contributed by the student often is the inhibiting factor towards achievement, in particular, the mental and self-management catalysts. Mental characteristics include temperament and personality. Self-management characteristics, including awareness and motivation/volition, lead to self-actualisation and personal maturity, both constructs being useful for school achievement/ talent development (Gagne, 2004). This is supported by Hattie's (2009) meta-synthesis of studies involving self-efficacy, self-concept, and motivation. The school's learner profile (Appendix 1) includes encouraging students to become problem solvers and creative thinkers, essential skills if students are to be successful after schooling (Kallick & Zmuda, 2017).

In the US, middle school (6th & 7th grade) appears to be the critical period where underachievement appears, due to a lack of perceived challenge (Kanevsky & Keighly, 2003; Peterson, 2001; Zabloski & Milacci, 2012), a lack of resilience when faced with new academic challenges (Rayneri, Gerber & Wiley, 2006), or a desire to identify with their non-identified peers (Bailey, 2011; Reis & McCoach, 2000). In NSW, it would appear anecdotally that Year 8 is when underachievement appears and it intensifies in Years 9 and 10. The challenge of Years 11 and 12 may seem to act as an antidote.

The AOM was proposed by Siegle and McCoach in 2005 to explain why gifted students underachieve (see Fig. 1). Ritchotte, Matthews and Flowers (2014) suggests that

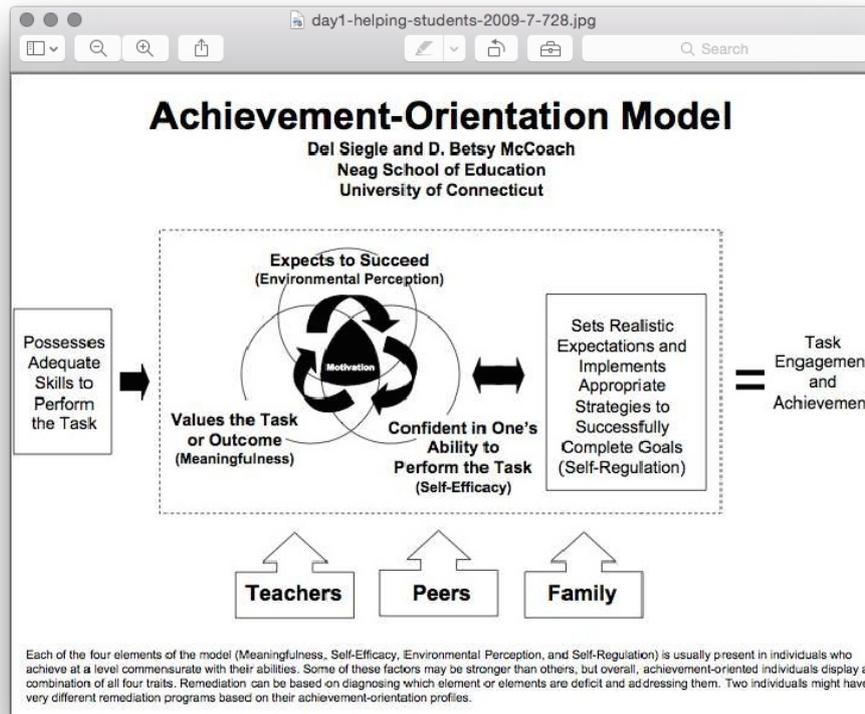


Fig 1. AOM (Siegle and McCoach, 2005)

the model may have validity in its use to develop interventions to address the needs of gifted underachievers. According to the AOM, gifted achievers find school useful (goal valuation), the environment supportive (environmental perceptions), and perceive themselves to have ability to perform academic tasks (self-efficacy), all of which leads to motivated students who self-regulate and are engaged in their learning, all of which is supported by Hattie's (2009) meta-synthesis.

A study into interventions for gifted underachievers (Rubenstein, Siegle, Reis, & McCoach, 2012) found that students using treatments linked to goal valuation and environmental perceptions showed the greatest change, measured in grade improvement; treatments linked to self-efficacy and self-regulation showed no or little grade improvement. The researchers suggest that treatments may have to be individualised to suit the cause of underachievement, and that providing the student with choice and relative control over differentiation of their learning appears to work best.

Another intervention that may have substantial benefits is Bibliotherapy. Bibliotherapy systematically matches reading materials to the needs of each learner to help with student achievement and development (Johnson, Wan, Templeton, Graham, & Sattler, 2000, cited in Cook, Earles-Vollrath, & Ganz, 2006), often used with students with disabilities. Cook et al (2006) suggest that Bibliotherapy provides information and insight into a specific experience, communicates new values and attitudes towards the problem, and more importantly, help students understand that they are not the only one who have experienced the problem. Further, Hebert, Long and Speirs Neumeister (2001) suggest that biographies of gifted individuals could help students gain insights into dealing with problems that they face.

### *Aim*

This project studied the effect of using biographies as Bibliotherapy (environmental perceptions) and differentiation techniques (goal valuation/ task meaningfulness) to counter underachievement in a group of identified high ability underachievers at Inaburra School; in particular, Years 7 and 9. This ultimately involved training students from Years 7 to 10 over a two-year period.

### *Research question*

The research question for the study is: Will Bibliotherapy and/or differentiation techniques be sufficient to reverse underachievement?

### *Methodology*

The project was a quantitative case study involving action research on whether two proposed interventions would reverse underachievement in high ability students at an independent co-educational school. This utilised a quasi-experimental approach (Gribbins & Herman, 1997) to subject identified high ability students in a year group to training in a strategy and charting any changes in behaviour and learning outcomes by pre and post testing them.

This design was chosen as the most effective way to chart any progress or lack thereof for participants in the chosen intervention. Siegle, McCoach and Shea (2014)

suggests that the application of his model to a group of students would add a collaborative effect on the individual's motivation. A shared affirmative affect in goal valuation or self-efficacy increases motivation or at a minimum has a positive impact on the student's self-perception. Their optimism from the support they gain from sharing experiences, will determine their willingness to self-regulate and achieve.

At each round, the project involved ten to fifteen students (depending on the identification process) from Years 7 and 9, 1 classroom teacher, and 1 project manager. The course for the students ran for 10 weeks on a Year 9 elective line (5 lessons per cycle) in Term 1 of 2016 and 2017. The Year 7 students did their course in Term 3 of the same year. Their course ran in the common year 7 subject, Learning Foundations. Terms 2 and 4 were used to analyse and write up the data. The age range of students was 12-15 years old and were approximately two-thirds male and one third female. Over the two years this included fifty-seven students.

Data analysis was conducted using IBM SPSS Statistics, a software package that provides quantitative analysis including correlations, and testing of relationships.

### *Methods and Data Collection Approaches*

In 2015 Inaburra School applied for and received a school-based action research grant of \$130,000 from AISNSW to conduct a 2-year study into high-ability underachieving students and strategies to turn that around.

#### 2016

The project was looking for indicators of improvement in motivation and achievement scores of identified high ability underachievers after a 10-week intervention program (see Appendix 2). First, students were identified as gifted underachievers based on their ability (psychometric tests, CogAT or other similar tests) at moderately gifted and above, and their achievement (PAT tests, class and semester reports) at a C grade or less. The identified students were gathered into a meeting where the research idea was presented. The students were given opportunity to ask questions and were then presented with a letter that both they and their parents had to sign (see Appendix 3). Membership in this program called IGNITE was voluntary.

They completed a survey prior to beginning the intervention, called the SACEQ - School Attitude, Coping and Efficacy Questionnaire (see Appendix 4) and completed the same survey at the end of 10 weeks. No ethical guidelines have been contravened in the consideration of the project.

Thirteen Year 9 students were trained to use the Maker Model (Maker, 1982) and Bibliotherapy in two to three sessions using training videos created from the initial cohort of Year 9 students (see Appendix 5) and then expected to use these to help enhance and challenge their own learning in the classroom. Students in the project were supported individually and as a group to extend their own learning based on their area of passion in their class activities, lessons and tasks. They blogged their results and feelings over the term. They were then asked to meet for 10-20 mins once a fortnight, during their elective lessons, with a project member, to give an account of their progress or difficulties.

A pre and post survey of their motivation and attitude to school and learning was done as part of the collection of data.

In Term 3, fourteen Year 7s were subjected to the same process. Year 7 students were withdrawn from their Learning Foundation lessons, again for 3 periods, for exposure to the two interventions, and how to use a suitable blogging tool (see Appendix 6). They then met with a project member once a fortnight during their Learning Foundation lessons. However, because students found it difficult to use the interventions early on, the project member also visited students in their lessons, helping them apply the interventions.

Skype calls with one of the project's critical friends, Jennifer Ritchotte, helped with the analysis and understanding of the data collected. In December, two project members visited some schools in the US and Canada. The visit was to observe a range of measures implemented to support and encourage underachieving gifted students. A variety of different types of schools were observed – a school for twice exceptional students, a university program for Years 7 and 8 students, a pilot program in a mainstream primary school and an online classroom. The study tour was useful in understanding of the different approaches and strategies used with high ability underachievers (see Appendix 7 for a report on the study tour).

2017

As per 2016, fifteen Year 9 students were withdrawn in Term 1 and fifteen Year 7 students in Term 3. The program continued to be encouraged to discuss face to face and journal/blog their experience on a blogging website.

Ruth Phillips, developer of the SACEQ, came to teach a PD strand (five 1-hour sessions after school) on motivating underachievers in the first half of 2017. Teachers who attended were shown various strategies to motivate underachievers as well as being exposed to the Maker Model so that they understood what the IGNITE students were doing in their classes.

### *Intervention design*

The design of the project's intervention program was underpinned by the AOM (Siegle and McCoach, 2005) which states that gifted achievers find school useful (goal valuation), the environment supportive (environmental perceptions), and perceive themselves to have ability to perform academic tasks (self-efficacy). This project was also designed to provide learning experiences that assist students to become aware of their talent and to learn how to learn (Kallick & Zmuda, 2017, p1). Kallick & Zmuda (2017) describes four attributes of personalised learning - voice, co-creation, social construction and self-discovery. A student was encouraged to articulate their area of expertise, develop their own challenges to negotiate with their teacher to outline an engineered plan chosen by the student to increase their motivation and goal setting. A breakfast club was created to facilitate students, from Years 7 to 10, to build ideas developing relationships with other like-minded students, and perhaps building on another student's ideas. This group met once a week before school and was optional to attend. We notified the parents via a letter (Appendix 8). Those students who attended found these sessions useful to augment what was happening in the classroom and with IGNITING their assignments. Finally, students self-direct their own learning choosing the most suitable intervention to achieve the classes' learning intention (Kallick & Zmuda, 2017). Students were taught the value of self-efficacy using a continuum (see Appendix 9). The students are able to state where on this scale they are at the beginning of the ten weeks and then again show their progression at the end of this time.

Students were given the option to choose to implement either of the two models.

These were:

### Maker Model

This model was developed by June Maker (1982). This model incorporates strategies for the modification of content, process, product and the learning environment. Content can be adjusted to accommodate the ability of gifted students to manipulate abstract ideas and deal with complexity. Process involves the methods that are used by teachers to present information, the questions asked of students and the mental and physical activities expected of them. This dimension of curriculum design focusses on higher-level thinking, creative problem solving, decision making, planning and forecasting (see Fig 2.). The end Product can be adjusted to make it more complex and far-reaching for the student. While the model also includes the Environment, students were not exposed to this dimension as this is often under the control of the classroom teacher.

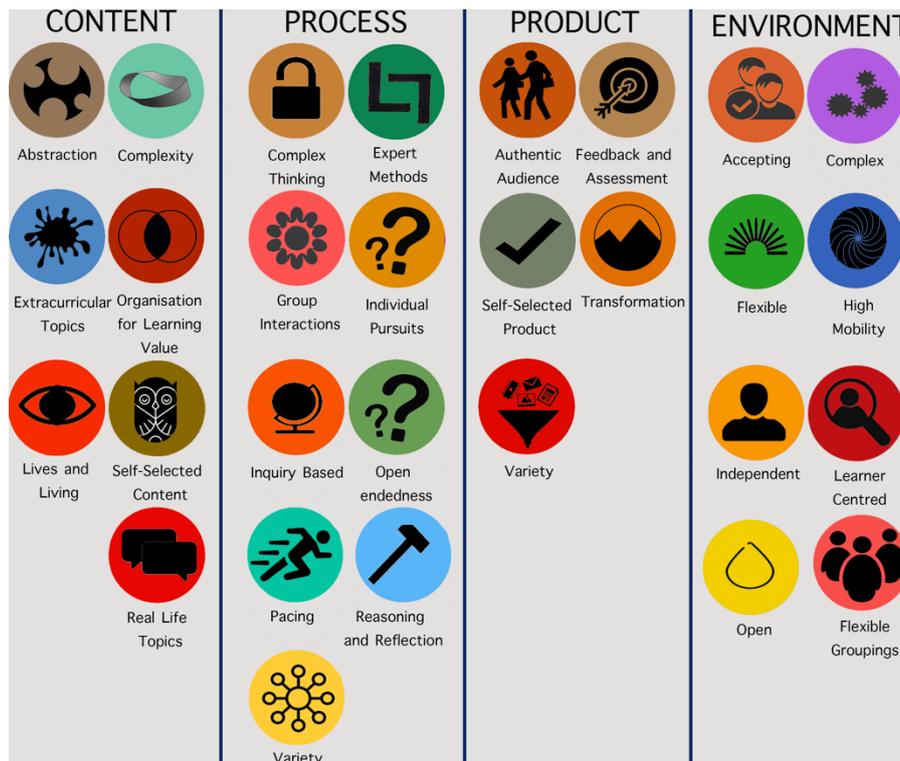


Fig 2. Maker Model (Kanevsky, 2016)

The focus of the project was particularly on two of the available Content strategies - Abstraction and Complexity. The students were free to choose any of the other strategies as

their work required. Students discussed together how they applied these specifically on common assessment tasks or classwork and often this lead to a more detailed understanding of each strategy. Students were provided with a bookmark to help them remember the different strategies (see Appendix 10); the application of these was individually discussed at the IGNITE Breakfast Club held weekly.

### Bibliotherapy

Bibliotherapy systematically matches reading materials to the needs of each learner to help with student achievement and development (Johnson, Wan, Templeton, Graham, & Sattler, 2000, cited in Cook, Earles-Vollrath, & Ganz, 2006), often used with students with disabilities. Cook et al (2006) suggest that Bibliotherapy provides information and insight into a specific experience, communicates new values and attitudes towards the problem, and more importantly, help students understand that they are not the only one who have experienced the problem.

Students research the characteristics and motivations behind the person's eminence with the following questions in mind: How did the person harness his/her characteristics, personality and volition to succeed? Why did the person succeed in the area chosen? Are there lessons that can be learned from this person?

### *Data collection and management*

Data was collected from surveys pre and post the intervention (see Appendix 4) as well as comments from blogs and interviews (see Appendix 6) and school reports.

The survey instrument SACEQ was designed by Ruth Phillips as part of her PhD research. The instrument includes parts of previous instruments by Swiatek's *Social Coping Questionnaire* (2001), McCoach's *School Attitude Assessment Survey -Revised* (2002), and Muris's *Self Efficacy Scale* (2001) (cited in Phillips, 2017). There are ten subscales including denial of giftedness, use of humour as a coping mechanism, academic self-perception, attitude to teachers, attitude to school, goal valuation, motivation, academic self-efficacy, social self-efficacy and emotional self-efficacy. Each have three to nine items (see Appendix 4). High ability underachievers often deny their own abilities and use humour as a coping mechanism, hence the inclusion of Swiatek's questionnaire. McCoach and Siegle also found

that students' motivation were often linked to their attitude towards their teachers and school (see Fig 1 AOM); they also suggested that students' perception of the importance of their learning in their subjects and classwork linked to their understanding of their own career path (goal valuation) helped them become more motivated in their application to study at school. Academic self-perception defines the individual's perception of their ability to learn at school and is linked to academic self-efficacy because if students believe they are good learners, then they perceive themselves as able to complete learning tasks (Philips, 2017); hence, the use of Muris' scale.

The survey used was converted into a secured Google Form linked to a Google Drive spreadsheet. The students had to login to their school account with a password to maintain confidentiality. Only the project manager and team member had access to the data. Data was collected with a grid allowing only one response per question and restricted to the available choices. This limited any errors. Any manipulation or analysis of the data was conducted on a copy of the original data to ensure access to the original clean data, minimising errors contaminating the original. The investigations were cross-checked to ensure that similar results were reached. The survey instrument SACEQ was checked for reliability using the IBM SPSS Statistics package. Results of this is reported in the Results section of this report.

### *Results and Discussion*

One student left midway through the program so the analysis was done on 56 students. The table below shows that both interventions provided improvement in student perception and attitude towards their own learning, school and self-efficacy, the most improvement being in students accepting their ability (49% in the Maker Model group and 43% in the Bibliotherapy group) as well as motivation in the Bibliotherapy group (50%).

The IBM SPSS Statistics package was used to conduct a thorough analysis. The sample was found to be normally distributed.

<b>Table 1    Report on Improvement Using SACEQ</b>
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%	<b>Maker Model (n=42)</b>	<b>Bibliotherapy (n=14)</b>
Less of Denying Giftedness	50	43
Less of Social Coping using Humour	36	14
Academic Self Perception	33	29
Attitude to teachers	24	29
Attitude to school	7	21
Goal valuation	19	21
Motivation	31	50
Academic self-efficacy	29	14
Social self-efficacy	24	21
Emotional self-efficacy	40	29

The results from the quantitative analysis may not necessarily be conclusive as the sample is small. The Cronbach alphas that were obtained showed that the items for the factor, humour, was particularly problematic, which may mean that those results are not reliable; however, the rest of the factors are very strong (see Table 2).

The instrument chosen, SACEQ, would appear to be robust, apart from the humour as a coping mechanism factor. This will need further research as the instrument worked well for Phillip's study with students from selective public schools. It is probable that the school's small sample size has had some impact with this anomaly.

**Table 2 Reliability measures for the survey instrument SACEQ**

	<b>Cronbach alphas</b>
Denial n=8	.75
Humour n=5	.10
Academic self-perception n=7	.90
Attitude to teachers n=7	.94
Attitude to school n=3	.97
Goal valuation n=7	.97
Motivation n=9	.95
Academic self-efficacy n=8	.90
Social self-efficacy n=8	.93
Emotional self-efficacy n=7	.90

n = number of items

The first five items measure environmental perceptions on the AOM as these represent the individual's perception of themselves as learners and their relationships with teachers and school; the goal valuation and motivation items are represented on the AOM and; academic, social and emotional self-efficacy measure self-efficacy on the AOM.

	Intervention	gender	humour	academic self-perception	attitude to teachers	attitude to school	goal valuation	motivation	academic self-efficacy	social self-efficacy	emotional self-efficacy
year	.19*	-.15*	.31*	.62**	.39**	.51**	.52**	.45**	.18*		
intervention				.31**	.33**	.43**	.25**	.18*	.43**	.32**	.33**
gender			-.18*	-.26**	-.21*	-.27**	-.37**	-.25**	-.17*	-.22*	
denial					.16*				.33**	.30**	.27**
humour				.25**		.18*				-.20*	
academic self-perception					.62**	.58**	.73**	.69**	.35**	.23**	.22*
attitude to teachers						.76**	.63**	.69**	.46**	.33**	.19*
attitude to school							.69**	.62**	.40**	.34**	
goal valuation								.78**	.41**	.42**	.21*
motivation									.52**	.37**	.26**
academic self-efficacy										.67**	.61**
social self-efficacy											.59**

**Table 3 Correlations**

\*correlation significant at .05 level (1 tailed)

\*\*correlation significant at .01 level (1 tailed)

Table 3 shows the non-parametric Spearman's correlations that were significant in the sample given the data collected. While the strengths of the correlations may be varied amongst the factors, Table 3 suggests that there are correlations between,

- the year group and the choice to use humour as a coping mechanism ( $r=.31, p<.05, 1$ -tailed).
- the year group and attitudes to school ( $r=.51, p<.01, 1$ -tailed) and teachers ( $r=.39, p<.01, 1$ -tailed).
- the year group and whether the students valued tasks given ( $r=.52, p<.01, 1$ -tailed), their motivation for school work ( $r=.45, p<.01, 1$ -tailed) and their academic self-efficacy ( $r=.18, p<.01, 1$ -tailed).
- the intervention chosen and students' perception of their academic capacity ( $r=.31, p<.01, 1$ -tailed), attitudes to school ( $r=.43, p<.01, 1$ -tailed) and teachers ( $r=.33, p<.01, 1$ -tailed), goal valuation ( $r=.25, p<.01, 1$ -tailed), motivation ( $r=.18, p<.05, 1$ -tailed) and all three types of self-efficacy measures, academic, social and emotional ( $r=.43, .32, .33$  respectively,  $p<.01, 1$ -tailed).
- gender and the use of humour as a coping mechanism, academic ability, attitudes to school and teachers, goal valuation, motivation and self-efficacy. The result on humour should be interpreted with caution due to the low Cronbach alpha for reliability.
- denial of their own ability shows a weak positive correlation with attitude to teachers ( $r=.16, p<.05, 1$ -tailed), and their academic, social and emotional self-efficacy ( $r=.33, .30, .27$  respectively,  $p<.01, 1$ -tailed). This may be due to the small sample size.
- academic self-perception, attitudes to school and teachers, goal valuation, academic self-efficacy, social self-efficacy and emotional self-efficacy. Academic self-perception showed strong positive correlations with student attitudes to teachers ( $r=.62, p<.01, 1$ -tailed) and school ( $r=.58, p<.01, 1$ -tailed), goal valuation ( $r=.73, p<.01, 1$ -tailed) and motivation ( $r=.69, p<.01, 1$ -tailed), moderate positive correlations with academic self-efficacy ( $r=.35, p<.01, 1$ -tailed), and weak positive correlations with social ( $r=.23, p<.01, 1$ -tailed) and emotional self-efficacy ( $r=.22, p<.01, 1$ -tailed).

These results support the data obtained in Table 1. A 1-tail significance was carried out because of the question the project had begun with, that is, that the interventions would reverse underachievement in high ability underachievers.

A paired t-test was conducted on the pre and post survey data to see if there were significant changes to students after engaging in one of the interventions. No significant results were found as the size of the population may have been too small to obtain significant findings using this method. Therefore, effect sizes using Cohen's *d* were calculated to enable analysis of significant findings. This is also what is recommended by the American Psychological Association (APA). Effect sizes were calculated by dividing the difference between the means with the mean standard deviation.

There were suggested (statistically significant) small improvements in student attitudes to teachers ( $d=.16, p=.03, df=41$ ) and school ( $d=.08, p=.03, df=41$ ) in the Maker Model.

While there were no statistically significant results from Bibliotherapy, the effect sizes in students using humour less as a coping mechanism ( $d=.24, p=.18, df=13$ ), academic self-perception ( $d=.10, p=.34, df=13$ ), goal valuation ( $d=.12, p=.28$ ), and academic self-efficacy ( $d=.11, p=.22, df=13$ ) suggest that there are small practical improvements for these factors. Again, the results pertaining to humour as a coping mechanism needs to be interpreted with caution due to the small Cronbach alpha for reliability.

The data was further analysed by examining the chosen interventions using an independent t-test. When the interventions were individually analysed, the following effect sizes were obtained. Table 4 below shows the comparison between Bibliotherapy and the Maker Model in terms of effectiveness as interventions in the IGNITE project. The results suggest that the Maker Model and Bibliotherapy were not significantly different from each other in terms of effectiveness. However, there were small effect sizes suggesting that Bibliotherapy was more effective than the Maker Model in improving attitudes to teachers ( $M=.29, SE=1.61, p>.05, d=.15$ ), goal valuation ( $M=1.79, SE=3.04, p>.05, d=.18$ ) and academic self-efficacy ( $M=.79, SE=1.00, p>.05, d=.14$ ). These results support the above paired t-tests results. Again, while the *p* values are larger than .05, the effect sizes show small improvements.

There would appear to be a difference in the areas of improvement for students depending on the intervention chosen, and these results would support the data in Table 1. There is research to suggest that a post-pre survey (Simon Fraser University, 2017) for projects like this may be more useful after discussing this with Lannie Kanevsky, the project's critical friend, on the study tour (see Appendix 7); however, it was not possible to implement this for this study as the parameters for the study had already been set. This may be an area for further research.

**Table 4 Comparing Maker Model and Bibliotherapy as interventions**

	<b>Interventions</b>	<b>Mean</b>	<b>SE</b>	<b>t</b>	<b>P (2-tailed)</b>	<b>Effect size (d)</b>
Denial	Maker	.21	.96	.040 (15)	.97	.01
	Bibliotherapy	.07	3.45			
Humour	Maker	.40	.54	-.53 (54)	.60	.07
	Bibliotherapy	1.00	1.07			
Academic Self-Perception	Maker	-1.00	1.20	-.03 (54)	.98	.00
	Bibliotherapy	-.93	2.25			
Attitude to teachers	Maker	-1.38	.69	-1.10 (54)	.28	.15
	Bibliotherapy	.29	1.61			
Attitude to school	Maker	-.43	.22	-.30 (14)	.77	.08
	Bibliotherapy	-.07	1.19			
Goal valuation	Maker	-.26	.55	-.66 (14)	.52	.18
	Bibliotherapy	1.79	3.04			
Motivation	Maker	-.55	1.12	-.63 (54)	.53	.09
	Bibliotherapy	.86	1.87			
Academic Self-efficacy	Maker	-.38	.55	-1.05 (54)	.30	.14
	Bibliotherapy	.79	1.00			
Social Self-efficacy	Maker	.24	.86	.58 (54)	.57	.08
	Bibliotherapy	-.64	.58			
Emotional Self-efficacy	Maker	1.02	.65	.43 (54)	.67	.06
	Bibliotherapy	.50	.82			

Analysis using independent t-tests was also carried out to look at differences between the year groups and gender.

Even though  $p$  values do not show significance, there were small effect sizes obtained showing differences between the year groups for using humour as a coping mechanism: Year 9 ( $M=1.33$ ,  $SE=.76$ ) showed more improvement than Year 7 ( $M=-.17$ ,  $SE=.59$ ) after interventions ( $t=-1.58$ ,  $df=54$ ,  $p=.12$ ,  $d=.21$ ). This is to be interpreted with caution as stated previously, due to the small Cronbach alpha obtained for this factor.

In terms of attitude to teachers, Year 9 ( $M=.26$ ,  $SE=.87$ ) showed more improvement than Year 7 ( $M=-1.90$ ,  $SE=.95$ ) after interventions ( $t=-1.49$ ,  $df=54$ ,  $p=.14$ ,  $d=.20$ ), and in the factor, attitude to school, Year 9 ( $M=-.07$ ,  $SE=.55$ ) showed more improvement than Year 7 ( $M=-.90$ ,  $SE=.37$ ) after interventions ( $t=-1.77$ ,  $df=54$ ,  $p=.08$ ,  $d=.23$ ). There were also moderate effect sizes for goal valuation: Year 9 ( $M=2.56$ ,  $SE=1.51$ ) showed more improvement than Year 7 ( $M=-1.90$ ,  $SE=.66$ ) after interventions ( $t=-2.76$ ,  $df=54$ ,  $p=.01$ ,  $d=.35$ ) and motivation: Year 9 ( $M=2.44$ ,  $SE=1.31$ ) showed more improvement than Year 7 ( $M=-2.66$ ,  $SE=1.25$ ) after interventions ( $t=-2.82$ ,  $df=54$ ,  $p=.01$ ,  $d=.36$ ). As before, the humour factor should be interpreted with caution due to the small Cronbach alpha obtained.

There were no statistically significant differences between male and female participants in their response to the interventions. Effect sizes were also very small except for using humour as a coping mechanism: females ( $M=1.42$ ,  $SE=.72$ ) showed more improvement than males ( $M=.11$ ,  $SE=.62$ ) after interventions ( $t=-1.29$ ,  $df=54$ ,  $p=.20$ ,  $d=.17$ ); attitude to teachers: males ( $M=.65$ ,  $SE=.77$ ) showed more improvement than females ( $M=.26$ ,  $SE=.87$ ) after interventions ( $t=.67$ ,  $df=54$ ,  $p=.51$ ,  $d=.10$ ); and motivation: males ( $M=.32$ ,  $SE=1.20$ ) showed more improvement than females ( $M=-1.21$ ,  $SE=1.61$ ) after interventions ( $t=.75$ ,  $df=54$ ,  $p=.45$ ,  $d=.10$ ). The humour factor should be interpreted with caution due to the small Cronbach alpha obtained.

These results would support the correlations found in Table 3.

Table 5 below shows that the interventions improved students' goal valuation and/or motivation, which is supported by the analysis done using the IBM SPSS Statistics package (see Tables 3 and 4). 35% of students using the Maker Model improved in goal valuation (2%), motivation (17%), or in both goal valuation and motivation (14%). 43% of

students using Bibliotherapy improved in motivation (29%), or in both goal valuation and motivation (21%).

<b>Table 5 Did interventions improve goal valuation or motivation for students?</b>		
	<b>Maker Model (42 students)</b>	<b>Bibliotherapy (14 students)</b>
Goal valuation	2%	0%
Motivation	17%	29%
Both	14%	21%
No effect	67%	50%

Correlations analysis between interventions and survey factors shows effect sizes of  $d=.25$  ( $p<.01$ , 1-tailed) for goal valuation and  $d=.18$  ( $p<.05$ , 1-tailed) for motivation which are small to moderate gains.

Table 6 below shows the relationship between academic self-perception and improvement in goal valuation and motivation. 32% of participants reported an improvement in their academic self-perception, that is, they improved in their perception of their ability to learn.

<b>Table 6 Did improvement in academic self-perception improve goal valuation and/or motivation? (32% of participants reported improvement)</b>		
	<b>Maker Model (14 students)</b>	<b>Bibliotherapy (4 students)</b>
Both	17%	0%
Goal valuation	29%	25%
Motivation	7%	25%
No effect	50%	50%

Out of these, students using the Maker Model reported an improvement in their goal valuation (29% of 14 students), motivation, (7%), or both goal valuation and motivation (17%), while students using Bibliotherapy reported an improvement in goal valuation (25%) or motivation (25%). 50% of students in both interventions did not report an improvement in either goal valuation or motivation (see Table 6). These results are also supported by the analysis using the IBM SPSS Statistics package (see Table 3 and 4). Academic self-perception showed large positive effect sizes with goal valuation ( $d=.73, p<.01, 1\text{-tailed}$ ) and motivation ( $d=.69, p<.01, 1\text{-tailed}$ ).

These results would suggest that students after interventions did improve in their environmental perceptions, goal valuation and self-efficacy, thus impacting on their overall motivation, as set out by the AOM.

Students also showed improvement in their academic results when comparing two reports, one before the program and the second after the program (see Table 7 below). Only 4 subjects were reported on as these are the core subjects in the school curriculum. These results showed more improvement in the subjects, English, Mathematics and HSIE but not as much in Science. This may be due to the students finding it easier to differentiate those subjects for themselves or perhaps that they perceived different levels of support from the teachers in different subjects.

<b>Table 7 Did interventions improve academic achievement?</b>		
	<b>Maker Model (42 students)</b>	<b>Bibliotherapy (14 students)</b>
English	31%	43%
HSIE	43%	43%
Maths	43%	36%
Science	40%	7%

When the data from the students who improved in their academic self-perception (see Table 6) was examined for improvement in academic achievement, the results suggests that improvements in academic self-perception may improve academic results (see Table 8 below).

<b>Table 8 Did improvement in academic self-perception improve academic achievement?</b>		
	<b>Maker Model (14 students)</b>	<b>Bibliotherapy (4 students)</b>
English	29%	25%
HSIE	21%	75%
Maths	50%	25%
Science	43%	25%

Overall, the data shows that there may be positive results from using the Maker Model and Bibliotherapy as interventions to support high ability underachievers. When the above results were compared to 18 randomly selected non-participants from the same year groups, the following data were observed (see Table 9).

<b>Table 9 Comparison of IGNITE students reporting academic self-perception improvement vs non-IGNITE students</b>				
	English	HSIE	Mathematics	Science
Bibliotherapy	25%	75%	25%	25%
Maker Model	29%	21%	50%	43%
Non-IGNITE	61%	11%	67%	39%

These results suggest that there have been possible benefits from participation in the program. While there is no improvement across all four subjects, there has been more improvement in some subjects compared to the non-IGNITE students. These results may also indicate the subjects in which the participants were more prepared to IGNITE and

therefore more interested in improving in. As a result of these results, a new initiative will begin in 2018 (see discussion on the IGNITE Seeker program below).

Perhaps, the use of both interventions concurrently would actually be more useful to the students. The Maker Model and Bibliotherapy appears to produce improvement in different factors as per the SACEQ (see Table 1) which suggests that both are needed to encourage students to improve holistically in their self-perception and efficacy in different areas. Students were more likely to choose the Maker Model because of the resources that were supplied to students, the abstractness of the philosophy of Bibliotherapy, and the Maker Model provided structure needed for underachievers. Perhaps in the future, Bibliotherapy can be structured as the strategy, Lives and Living, in the Maker Model to make better use of its promise.

While the project would like to see the two interventions compared, what appeared to occur was the blurring of the two for the students, particularly the Year 7 students. They appeared to use Bibliotherapy for self-efficacy and the Maker Model for goal valuation. Given that gifted underachievement may be considered as a 'chronic phenomenon' (Colangelo, et al, 1993), these results while not overwhelmingly positive, show promise.

The student voice videos that were produced to support qualitatively the results obtained also show the intangible improvements that perhaps are hard to measure. The study found that some students who were in the program last year are still continue to 'IGNITE'. Speaking with the two students in the pilot program, their identification and subsequent discussions with them profoundly impacted them in their learning and their perception of themselves. This impact cannot be quantified but is equally important, and the results from the study may be more far reaching and long term than was originally considered.

The research experience has been good for the school. Some teachers are interested in the process, others are interested in the outcomes achieved so far by the students, and some have commented on the progress made by the students two terms after the interventions ceased to be recorded.

### *The study tour*

At the end of 2016, a study tour to the US and Canada was conducted with the aim of looking at strategies that other institutions used to discourage underachievement. It was considered that schools which catered in some way for high ability students would inherently have ways to encourage high ability students to achieve.

The study tour confirmed many things including the importance of student agency and voice, the use of the Maker strategies by teachers and students alike, and the use of grouping high ability students together. The study tour provided several useful insights for Inaburra School.

1. Student agency can be improved by enabling them to be responsible for their own learning. The Maker Model can be a useful framework for students to use in their learning but it can also be useful for teachers to use in their teaching focus.
2. The school could take advantage of more external competitions and programs to enable the students to be more proactive in broadening their horizon beyond school achievement. There is also no reason why the students could not publish original research and writing in academic journals.
3. The school could help students explore their areas of interest and strengths by using Lannie Kanevsky's Possibilities for Learning instrument, and Kolbe Y.

### *Limitations and Implications*

Conclusions cannot be generalised to other schools as the project is an action research on a small number of students in a single school.

The findings from the project has been shared at several conferences including AAEGT (UNSW, September/October 2016), AARE (Melbourne, December 2016), World Gifted Conference (UNSW, July 2017) and the AIS symposiums 2016 (see Appendix 11) and 2017. Another presentation will be made to AHISA (Hobart, April 2018) and at the Wallace Symposium (US, May 2018). Generally, teachers who attended the presentations have expressed interest in the project, with some of them beginning the program at their own schools in some way.

The project has shown promise in the improvements observed in students. However, for such findings to be conclusions, more research will need to take place in more schools and across a wider age group and diverse student populations.

### *Research to Practice Impact*

The IGNITE project becomes the IGNITE SEEKER program at Inaburra School in 2018.

- The IGNITE SEEKER (Self-efficacy, Experience, Enquiry, Knowledge, Engagement and Resilience) program will include all high ability students from years 5-12.
- Student agency and choice will continue to underpin the program. The program covers the breadth of all subjects and programs that is offered at the school, thus acknowledging the various ways that a child may be highly able.
- Students qualify for the IGNITE program if they score a band 7 and above in the CogAT, or they have a current psychometric assessment (may still require a CogAT to confirm) becoming Seekers.
- There are 4 levels of attainment in the program.
  1. Seekers have access to a number of videos, or attend the Breakfast Club (or something similar), to discuss the Gagne Model and Maker Model strategies. Classcraft (educational gaming platform) can be used to facilitate this.
  2. Seekers begin to differentiate lessons for themselves in one subject and keep a record of these (to be submitted as evidence). Seekers identify one area of involvement e.g. Competitive sport, ICAS competition, music, art.
  3. Differentiation in three subjects; at least 2 competitions counting e.g. ICAS, Future Problem Solving, World Scholar's Cup, Young Scientist, Inter school Debates, or eisteddfods; some form of leadership capacity e.g. youth group leader, SRC; and one other area of involvement.
  4. Level 3 + community involvement e.g. Publishing research in journal, presenting research as Youtube or TED, creating and marketing a new product, working with an NGO, leading at a youth group or organization. Achievement of EPA 4+ (Effort Point Average which the school uses to track student's effort, attitude and engagement in class.)

The IGNITE Seeker will embody the Inaburra Learner Profile should the student move through the levels of attainment. The program while providing for all high ability students will meet the needs of the underachievers in a non-specific way. Certificates of attainment will be made available to students upon leaving school if students reach level 2 and above.

- Entry into the program is voluntary. Administration of the program will be under the Learning Extension department. No time allocation is needed for students to be withdrawn from class. Checking in can be done online via Classcraft or Google Classroom. It will require at least one teacher from Learning Enrichment to have oversight of the program.
- Levels of attainment remain for the life of enrolment for the student.
- The IGNITE program is available to all qualifying students from years 5 and above.
- Providing the program will give the following benefits:
  - Acknowledgement of student agency and achievement
  - Collection and tracking of high ability student progress
  - Early detection and intervention for specific issues e.g. anxiety, lack of interaction with peers, learning difficulties.
  - Acknowledgement of the different areas of excellence that the school provides already as well as increasing the academic profile of students.
  - Tracking will be documented via Sentral (Inaburra's intranet and data management system), with use of flags and academic profiles.

### *Conclusion*

Identification appears to increase academic self-perception for many of these underachievers which supports Ritchotte, Suhr, Alfurayh & Graefe's study (2016). Students were empowered by the student agency involved in the use of Maker Model strategies. According to the AOM (Siegle & McCoach, 2005), high achieving students find school useful (goal valuation), the environment supportive (environmental perceptions), and perceive themselves to have ability to perform academic tasks (self-efficacy), all of which leads to motivated students who self-regulate and are engaged in their learning. This study supports many of the AOM's assertions, in particular, goal valuation and academic self-perception.

These factors were shown to correlate with motivation, suggesting that the AOM provides a good framework to explain underachievement in high ability students.

Year 7 students appeared to be more accepting of using the strategies shown than Year 9 students. However the analysis showed little difference between the year groups, and if any, Year 9s were more likely to show improvement after interventions.

The interventions, Maker Model and Bibliotherapy, should be used concurrently to produce holistic students and reduce underachievement in high ability students as they appear to target different factors in the AOM. When working together, the full extent of the AOM can be achieved (see Fig. 1).

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## Appendices

### Appendix 1 Inaburra Learner Profile



**INABURRA SCHOOL**  
A project of Menai Baptists

**THE INABURRA LEARNER PROFILE**  
Standing upon our Christian foundation and in partnership with our families, Inaburra seeks to shape life-long learners who are:

<b>KNOWLEDGEABLE + RESOURCEFUL THINKERS</b>	
<b>CREATIVE + CRITICAL INQUIRERS</b>	
<b>EFFECTIVE + CONFIDENT COMMUNICATORS</b>	
<b>RELATIONAL + COLLABORATIVE CONTRIBUTORS</b>	
<b>RESILIENT + RESPONSIBLE RISK-TAKERS</b>	
<b>ENGAGED + AWARE GLOBAL CITIZENS</b>	
<b>CONFIDENT + DISCERNING LEADERS</b>	

***(modified due to LF classes in Year 7)***

	<b>Bibliotherapy</b>	<b>Maker Model</b>
Week 1	Pre assessments using Self-efficacy and Motivation measure (R. Phillips), creativity measure (A. Erwin) and Kolbe Y Index (online) Choose students for the 2 streams. Introduction to <del>Kidsblog</del> and process of program	
Week 2	Students to choose eminent person to base research on. Students to take at most 1 lesson per week to do the research	Students to be taught the maker Model: Content, Process, Product options. Students to undertake to trial a differentiated task in a subject of choice.
Week 3		Students to differentiate at least 1 activity a day for 5 weeks.
Week 4		
Week 5		
Week 6		
Week 7		
Week 8	Students to work on a presentation of the characteristics and motivations behind the person's eminence. <ul style="list-style-type: none"> <li>● How did the person harness his/her characteristics, personality and volition to succeed?</li> <li>● Why did the person succeed in the area chosen?</li> <li>● Are there lessons that can be learned from this person?</li> </ul>	Students to work on a presentation detailing the techniques that worked and the techniques that did not. <ul style="list-style-type: none"> <li>● What were the similarities and differences between the techniques used?</li> <li>● Did any of the techniques help you in your learning this term? Why or why not?</li> <li>● Are there techniques that you will continue to use?</li> </ul>
Week 9		
Week 10	Post assessments using Self-efficacy and Motivation measure (R. Phillips), creativity measure (A. Erwin) and Kolbe Y Index (online)	

**Seven Key Elements of Student Based Learning (Kallick & Zmuda, 2017, p17-30)**

1. What are the desired results?
2. What aspects of the topic sparks your thinking? What is worth pursuing?
3. How does the audience shape the creation and communication of your task?
4. How is performance evaluated on a given task using marking criteria?
5. How do you show evidence of learning over time?
6. What does designing a learning plan look like for you?
7. How does feedback promote growth of your learning?

These questions were used with students to promote their understanding of how to implement either Maker Model or Bibliotherapy *interventions*.

Dear (parent/caregiver name inserted here),

I am writing to you with reference to recent norm-referenced tests that your child took recently. Our goal was to identify students who could be suitable candidates to take part in an academic research project, known as *Ignite*, that we will be conducting at Inaburra in 2016 and 2017.

We have been seeking to identify students of high ability who may not yet be performing to the levels of which they are capable. In considering the results, it has become apparent that your child's profile may match the characteristics that we are seeking for the candidates for this particular project.

The research project, which is based on educational research literature, will take place in Term 1, 2016. The students taking part will be placed in one of two distinct streams; the first involves the students differentiating their own learning and the second involves the students engaging in a research task. The time allocated to the students will come through withdrawal from one of their elective lines. While the specifics of the timetable are not yet settled, and the withdrawal from an elective line may provide some challenges for the students in Term 1, we are hopeful that the benefits the students experience will have an impact on their educational experience. Although the *Ignite* project is mainly conducted through individual work, the students will be supervised and mentored by selected teachers.

This research project is well-placed to make a unique contribution in the field of academic educational research and we are excited about the opportunity to lead in this way. The project team were awarded a substantial grant from the Association of Independent Schools NSW Research Council, which is being used to fund *Ignite*. We will be working with partners in the tertiary sector to evaluate and review our research; the project will meet all necessary standards for privacy, ethics and integrity. If the research is published or discussed in any external context, all data will be de-identified.

If you have any further questions about the *Ignite* project at this point, please contact Dr Lye Chan Long at [longl@inaburra.nsw.edu.au](mailto:longl@inaburra.nsw.edu.au)

Your child's participation is purely voluntary and you or your child can choose to withdraw at any point during the program. Believing it to be in the interests both of your child and, potentially, many others, we would like you to give your permission for your child to take part. If you and your child are happy to take part in the project, please complete the permission slip below and return it to Dr Long before the end of term

Yours sincerely,

Dr Lye Chan Long

Learning Leader – Learning Enrichment

I, \_\_\_\_\_, wish to withdraw my child, \_\_\_\_\_, from the IGNITE project. I understand that this will not be held against him/her at the school. I also understand that any data gathered in the time he/she was involved will not be shared without my written consent.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

(Parent/Caregiver Signature)

✂-----

I, \_\_\_\_\_, give permission for my child, \_\_\_\_\_ to participate in the IGNITE project which will take place Term X, 201X. I understand that this is voluntary and that he/she will be able to withdraw from the project at any time, and that the withdrawal will not be held against him/her. I also note that all information gathered will be held in confidence and not divulged to anyone outside the school without my written consent.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

(Parent/Caregiver Signature)

## Student Survey IGNITE

Please don't think too long about your responses. Your first response is best.  
There are 10 parts to this survey.

### 1. Part 1

Mark only one oval per row.

	1 = strongly true	2 = moderately true	3 = somewhat true	4 = neither false nor true	5 = somewhat false	6 = moderately false	7 = strongly false
I don't think that I am gifted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People think I am gifted, but they are mistaken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not gifted; I am just lucky in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As I get older and academic work gets more difficult, people will stop seeing me as gifted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of the successes I experience are due to luck	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are many people who are more gifted than I am	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try not to be too successful at the things I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't tell people that I am gifted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 2. Part 2

Mark only one oval per row.

	1 = strongly true	2 = moderately true	3 = somewhat true	4 = neither false nor true	5 = somewhat false	6 = moderately false	7 = strongly false
I tell a lot of jokes in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm good at making people laugh	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People think of me as a class clown	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people see me as serious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't like to give the appearance of being studious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**3. Part 3**

Mark only one oval per row.

	1 = strongly true	2 = moderately true	3 = somewhat true	4 = neither false nor true	5 = somewhat false	6 = moderately false	7 = strongly false
I am intelligent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at learning new things in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am capable of getting straight A's	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am smart in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School is easy for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can learn new ideas quickly in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I grasp complex concepts in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**4. Part 4**

Mark only one oval per row.

	1 = strongly true	2 = moderately true	3 = somewhat true	4 = neither false nor true	5 = somewhat false	6 = moderately false	7 = strongly false
My classes are interesting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like my teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like my classes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My teachers care about me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I relate well to my teachers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers make my learning interesting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of the teachers at this school are good teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**5. Part 5**

Mark only one oval per row.

	1 = strongly true	2 = moderately true	3 = somewhat true	4 = neither false nor true	5 = somewhat false	6 = moderately false	7 = strongly false
I am glad I go to this school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This school is a good match for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am proud of this school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**6. Part 6**

*Mark only one oval per row.*

	1 = strongly true	2 = moderately true	3 = somewhat true	4 = neither false nor true	5 = somewhat false	6 = moderately false	7 = strongly false
I want to get good grades in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important for me to do well in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doing well in school is one of my goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to do my best in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to get good grades in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doing well in school is important for my future career goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work hard at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**7. Part 7**

*Mark only one oval per row.*

	1 = strongly true	2 = moderately true	3 = somewhat true	4 = neither false nor true	5 = somewhat false	6 = moderately false	7 = strongly false
I use a variety of strategies to learn new material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I concentrate on my schoolwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am self-motivated to do my schoolwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am organized about my schoolwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spend a lot of time on my schoolwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I complete my schoolwork regularly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I put a lot of effort into my schoolwork.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I check my assignments before I turn them in.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a responsible student.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**8. Section 2 Part 1**

Mark only one oval per row.

	1 = strongly true	2 = moderately true	3 = neither false nor true	4 = moderately false	5 = strongly false
I can get teachers to help you when you get stuck on schoolwork?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can study when there are other interesting things to do?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can study a chapter for a test?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I succeed in finishing all your homework every day?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pay attention during every class?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I succeed in passing all subjects?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I succeed in satisfying your parents with your schoolwork?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I succeed in passing tests?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**9. Section 2 Part 2**

Mark only one oval per row.

	1 = strongly true	2 = moderately true	3 = neither false nor true	4 = moderately false	5 = strongly false
I can express your opinions when other classmates disagree with you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can become friends with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can chat with an unfamiliar person?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can work in harmony with your classmates?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can tell other children that they are doing something that you don't like?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can tell a funny event to a group of children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can succeed in staying friends with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I succeed in preventing quarrels with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10. Section 2 Part 3**

*Mark only one oval per row.*

	1 = strongly true	2 = moderately true	3 = neither false nor true	4 = moderately false	5 = strongly false
I succeed in becoming calm again when you are very scared?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can take steps to prevent becoming nervous?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can control my feelings?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can give myself a pep-talk when you feel low?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can tell a friend that you don't feel well?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can succeed in suppressing unpleasant thoughts?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can succeed in not worrying about things that might happen?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Training Slideshare link is <https://www.slideshare.net/secret/kiwvB5uTSBENKf>

### School based Training Videos



**Student A**



**Student B**



**Student C**



**Student D**



**Student E**

### Is IGNITE Helpful?

[Student A](#), [Student B](#), [Student C](#), [Student D](#), [Student E](#)

### Which Intervention Did You Use?

[Student A](#), [Student B](#), [Student C](#), [Student D](#), [Student E](#)

### How Did IGNITE Help Your Learning?

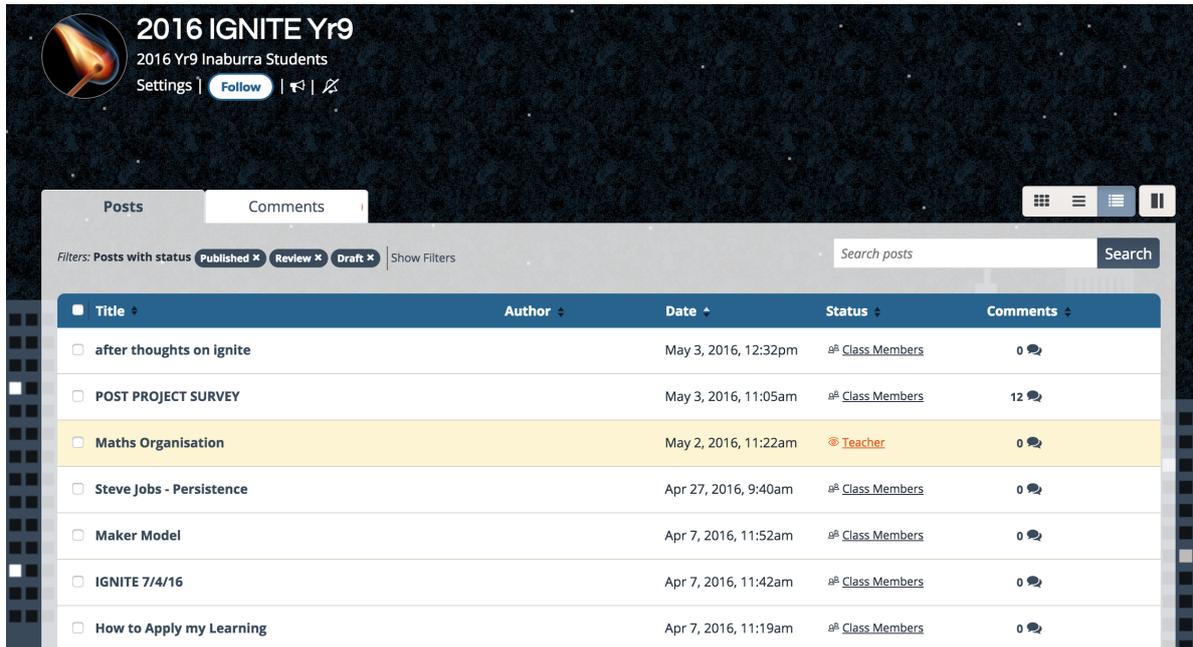
[Student A](#), [Student B](#), [Student C](#), [Student D](#), [Student E](#)

### Would You Suggest IGNITE To Other Students?

[Student A](#), [Student B](#), [Student C](#), [Student D](#), [Student E](#)

## Appendix 6 Blogging

### Year 9



**2016 IGNITE Yr9**  
2016 Yr9 Inaburra Students  
Settings | Follow | [Icons]

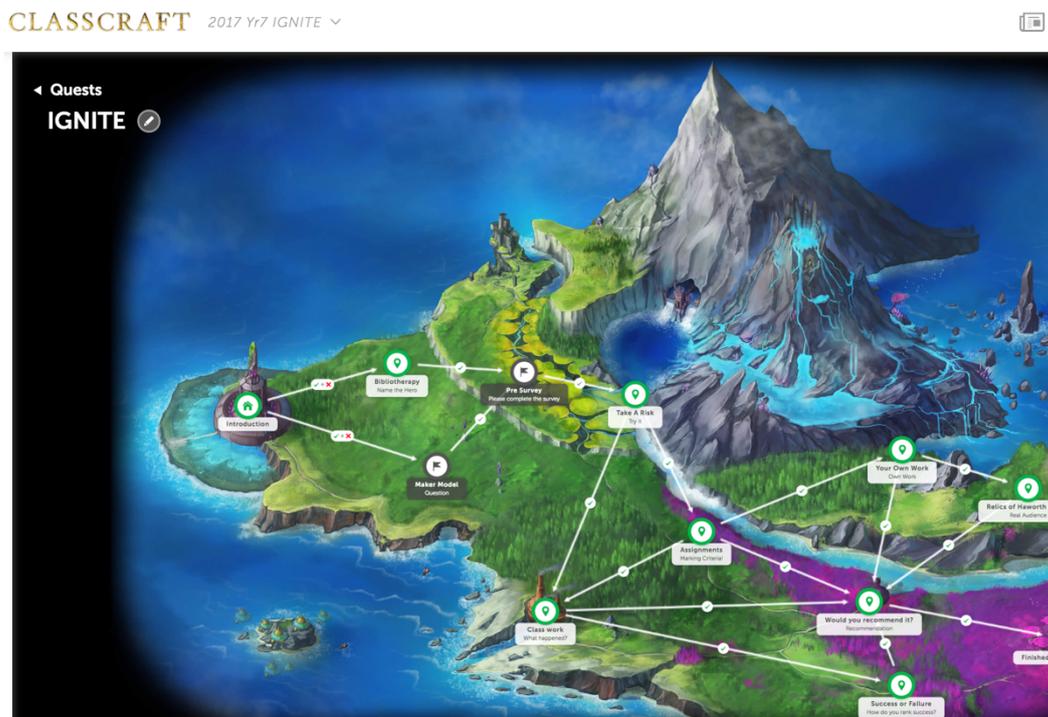
Posts | Comments

Filters: Posts with status **Published** | Review | Draft | Show Filters

Search posts Search

Title	Author	Date	Status	Comments
<input type="checkbox"/> after thoughts on ignite		May 3, 2016, 12:32pm	@ Class Members	0
<input type="checkbox"/> POST PROJECT SURVEY		May 3, 2016, 11:05am	@ Class Members	12
<input type="checkbox"/> Maths Organisation		May 2, 2016, 11:22am	@ Teacher	0
<input type="checkbox"/> Steve Jobs - Persistence		Apr 27, 2016, 9:40am	@ Class Members	0
<input type="checkbox"/> Maker Model		Apr 7, 2016, 11:52am	@ Class Members	0
<input type="checkbox"/> IGNITE 7/4/16		Apr 7, 2016, 11:42am	@ Class Members	0
<input type="checkbox"/> How to Apply my Learning		Apr 7, 2016, 11:19am	@ Class Members	0

### Year 7



**CLASSCRAFT** 2017 Yr7 IGNITE

Quests  
IGNITE

The image shows a quest map for CLASSCRAFT 2017 Yr7 IGNITE. The map is a colorful, stylized landscape with a mountain, a river, and a forest. It features several quest points marked with 'Q' icons and connected by a path. The quest points are:

- Introduction
- Bibliotherapy (Share the story)
- Pre Survey (Please complete the survey)
- Take A Risk (Try it)
- Assignments (Planning Content)
- Your Own Work (Own Work)
- Replica of Heararth Ca (Real Audience)
- Class work (What happened?)
- Would you recommend it? (Recommendation)
- Success or Failure (How do you really succeed?)
- Finished?

The study tour took place in December 2016 from the 6<sup>th</sup> to the 16<sup>th</sup> covering 8 schools in LA, Seattle, Vancouver, Washington DC and Boston. This report is a summary of the findings that came out of the trip.

The schools involved included a school for twice exceptional students (Bridges Academy), an independent selective primary school for gifted (Mirman School), 2 university schools preparing accelerants for university (Robinson Centre and the Massachusetts Math and Science Academy), a full time opportunity class in a comprehensive primary school (Bay Ridge Elementary School), a part-time opportunity cluster (Hyland MACC program), and an online Challenge class (Surrey district in British Columbia, Canada). We also interviewed teachers and principals of the various schools, Doug Lenzini, Robin Schader, Kim Vargas, Peter Krejcarek, Maren Halvorsen, Nancy Hertzog, Kathryn Gruber, Curtis Hisayasu, Brandon Kelsey, Mike Barney, Jocelyn Balaban as well as specialists in the area of gifted education, including Lannie Kanevsky, Joyce VanTassel-Baska, Janice Robbins, Gail Hubbard, Tybie Elenko, Ariel Baska, and Susan Baum.

The themes that arose from the study tour are as follows:

***Student agency***

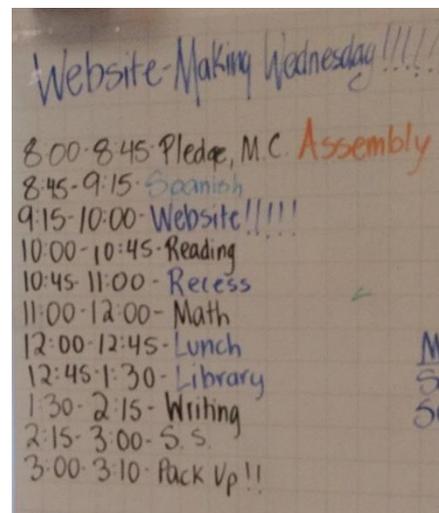
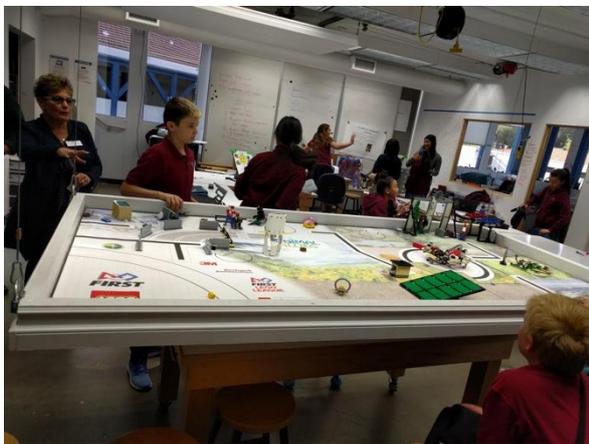
Every school program that was observed acknowledged that student agency, choice and voice was vital to student learning and reaching their potential. For example, a student in the Hyland MACC program decided to do a fundraiser for a cause she really believed in, and organized her class to participate and challenge the rest of the school to be part of her idea as well. The teacher incorporated her idea into the class learning and program for the week. Another example was seen in Mirman where the STEM teacher began a lunchtime robotics class to allow the students to continue working on their projects because they were not leaving the class to go to lunch. Students choose their subject topics semester by semester; in Bridges, the Middle School students decide on their daily timetable using PBL and cross-curricular themes, and in Bay Ridge, the teacher had the day's list of activities and lessons on the whiteboard and students could choose the order of completion of these

tasks. The teacher ran mini-lessons or tutorials where students needed to opt in prior to doing a task.

### ***Working with student strengths***

Students were encouraged to discover and then work with their learning preferences and strengths while still having to complete set tasks. For example, Massachusetts Math and Science Academy students were mentored in their area of strength by lecturers from their partner university and past students, and schools like Bridges, MACC online and Robinson Centre directed their students to be published or displayed their student work in a formal public forum, e.g. science fairs.

### ***Grouping strategies that work with gifted students***



Students identified for groups by IQ, referrals from a Gifted Education Mentor, teachers and parents, passion and interests, achievement.

- a. Full time ability grouping (Robinson Centre 7/8, Bay Ridge Elementary School 5/6/7, Bridges Academy, Massachusetts Math and Science academy) and Mirman School.
- b. Withdrawal programs (online Challenge class, MACC program)
- c. Flexible, task –oriented/ topic specific, student choice

### ***Maker Model strategies that work with gifted students***

- a. Abstraction and complexity – seen in all the programs observed- provided rigor and accelerated content
- b. Learning environment- student movement, choice, flexibility in timetable

- c. Real audience- Robinson Centre and Massachusetts Maths and Science Academy where students publish their work in appropriate academic journals.
- d. Study of people- Robinson Centre in their study of the composers behind the French national Anthem and the impact on its people
- e. Discovery/ inquiry – student choose to work in their area of interest to discover links between different areas of new learning, eg. science fairs, link between mathematics (angles) to geography and architecture
- f. Freedom of choice – student agency (refer to previous notes)
- g. Proof and reasoning – observed in every program where students had to justify their arguments and statements with evidence

### ***Teacher agency***

In all the programs, the teachers who worked with these students were flexible in their thinking and attitudes towards the students, respectful of the student ability to learn in a variety of ways, and innovative in their approach to teaching methods. They saw themselves as facilitators of student learning rather than the expert in the room, encouraging students to pursue their passion areas and taught as the need arose, to enable point in time learning. Point in time teaching comes from knowing what students need by way of pre testing them before a unit of work.

The tour provided valuable time spent on reflection and evaluation of research and experience of significant contributors to the field of gifted education; in particular, the time spent with Joyce, Gail, and Janice was invaluable in helping distil and clarify the insights that was being collected on the trip. The tour also provided insight into new areas of research that could possibly be incorporated into how projects could be managed at Inaburra; in particular, Lannie's contribution of the post-pre assessments which needs further exploration.

## Calendar

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		6- Dec	7- Dec	8- Dec	9- Dec	Layover in Vancouver
		<i>QF</i> 11 11.30 am to LA.	Mirman School 1pm	Robinson Academy	Vancouver (Surrey school district – several schools)	
		<i>Arr</i> 6.15am				
			<i>AS43</i> 5 LA to SEATTLE 6:30pm	<i>AS22</i> 42 Seattle to Vancouver 6.30pm		
		Bridges Academy 1pm		<i>arr</i> 7. 20pm		
			University Inn			
		Excite Holidays	4140 Roosevelt Way NE Seattle	Ocean Promenade Hotel		
		1282 5 Ventura Blvd Studio City		1561 1 Marine Drive		
				White Rock		
		Los Angeles, California	Los Angeles, California	Seattle, Washington	Vancouver, Canada	Vancouver Canada
<b>11- Dec</b>	<b>12- Dec</b>	<b>13- Dec</b>	<b>14- Dec</b>	<b>15- Dec</b>	<b>16- Dec</b>	
<i>Vancouver to Washington</i>	Visiting Joyce VanTassel Baska	Visiting Joyce VanTassel Baska	<i>Washington to Boston</i>	Mass Academy of Math and Science at WPI		
<i>Air Canada AC0166 to Ottawa 8.50am</i>			<i>AA21</i> 70 to Boston 11.30am		<i>Flights out</i>	
<i>AC84</i> 52 to			<i>Arr</i> 12.56pm			

Washington 6.10pm						
Arr 7.53pm			Court yard Worcester			
			72 Grove St			
			Worc hester			
	Was hington	Was hington		Worc ester, Massachusetts		
	DC	DC				

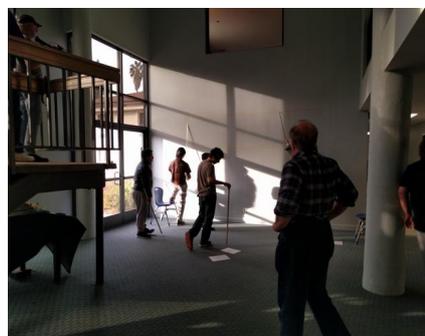
### Conclusion

The study tour gave us several useful insights for Inaburra School.

4. Student agency can be improved by enabling them to be responsible for their own learning. The Maker Model can be a useful framework for students to use in their learning but it can also be useful for teachers to use in their teaching focus.
5. The school could take advantage of more external competitions and programs to enable the students to be more proactive in broadening their horizon beyond school achievement. There is also no reason why the students could not publish original research and writing in academic journals.
6. The school could help students explore their areas of interest and strengths by using Lannie Kanevsky's Possibilities for Learning instrument, and Kolbe Y.



Bridges Academy - STEM Room



Bridges Academy - Artwork being created by students on a wall in the main office



Mirman School - A robotics table in the STEM room



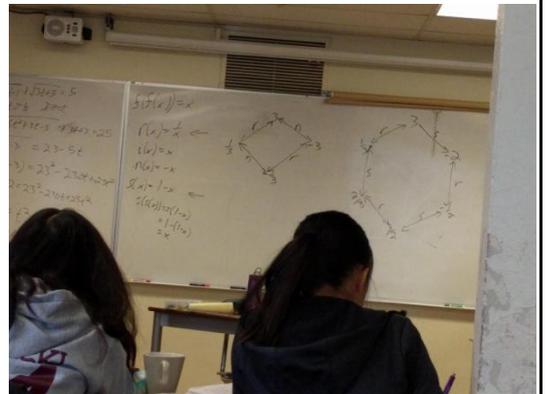
Mirman School - The robotics table being raised to the ceiling.



Mirman School - The robots are stored on this raised table



Robinson Centre - Year 7 class cross-curriculum lesson - history, english, music and mathematics



Robinson Centre - Year 7 Mathematics lesson