

Mastery Curriculum Policy



Believe, Succeed, Together

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Contents

1.0 Introduction	4
1.1 What is a Mastery Curriculum?	4
1.2 Elements of a Mastery Curriculum	4
1.3 The Mastery Approach to Classroom Learning.....	4
2.0 Present Capacity for Implementation.....	5
2.1 KS 3 Indicative Competencies	5
2.2 'DRAFT'	6
2.3 KS 4 Curriculum.....	6
3.0 Implementation	6
3.1 Shared Vision	6
3.2 Curriculum Design.....	6
3.2.1 Learning Goals and Benchmark for Mastery.....	6
3.2.2 Learning Units	7
3.2.3 Learning Objectives.....	7
3.3 Assessment	7
3.4 Classroom Culture and Pupil Attitudes.....	8
3.5 Timeline for Implementation	9
3.5.1 Autumn 2016	9
3.5.2 Spring 2016	9
3.5.3 Summer 2016.....	9
3.5.3 Academic Year 2017-18	9
3.5.4 Beyond 2018	9
4.0 Practical Considerations.....	10
4.1 Setting Pupils.....	10
4.2 SEN	10
4.4 AMA	10
4.5 Subject-specific Variation	11
4.6 Marking and Feedback.....	11
4.7 Homework.....	11
4.8 CPD.....	11
5.0 Appendices.....	12
5.1 Models of Learning	12
5.1.1 Bloom's Taxonomy of Educational Objectives.....	12

5.1.2 Burch’s Four States of Competence (Four Stages of Learning)	14
5.2 Related Pedagogy	14
5.2.1 Grit	14
5.2.2 Growth Mindset.....	15

1.0 Introduction

This policy represents a commitment to embed a 'mastery approach' to teaching and learning into the Academy curriculum.

A paradigm shift in approach, a 'mastery curriculum' demands careful planning, unequivocal staff co-operation and the adoption of a new classroom culture that will take time to embed effectively.

Outlined below is an overview of the mastery curriculum model and outline of how the Academy will move from its current position to the adoption of this model, together with consideration of impact and obstacles.

1.1 What is a Mastery Curriculum?

A mastery curriculum is based on the central belief *that virtually all learners can learn all important academic content to a level of excellence.*

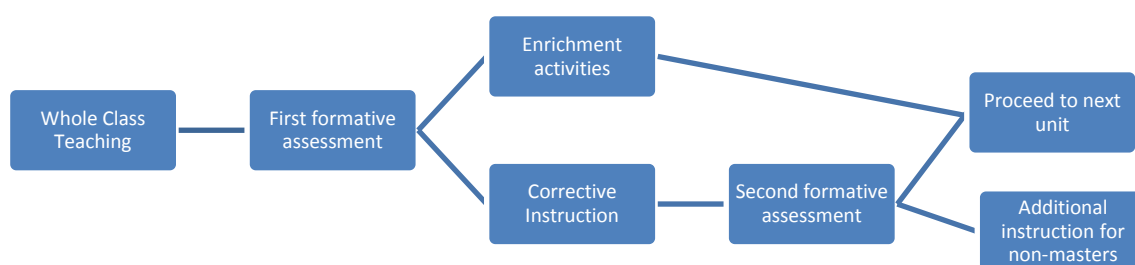
In a mastery curriculum model, classes move through topics at one pace until the vast majority (most systems use an 80% benchmark) reach an agreed level of competency, with a carefully considered benchmark for mastery.

1.2 Elements of a Mastery Curriculum

- Teachers reinforce an expectation that **all pupils are capable** of achieving high standards
- The large majority of pupils progress through the curriculum content at the **same pace**. Differentiation is achieved by emphasising deep knowledge and through individual support and intervention.
- Teaching is underpinned by methodical **curriculum design** and supported by carefully crafted lessons and resources to foster **deep conceptual and procedural knowledge**.
- Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying concepts in tandem.
- Teachers use **precise questioning** in class to test conceptual and procedural knowledge and **assess pupils regularly** to identify those requiring **intervention so that all pupils keep up**.

1.3 The Mastery Approach to Classroom Learning

The flowchart below outlines the process of teaching a single unit:



After whole class teaching introduces the core concepts, skills etc. of the unit, pupils' first formative assessment is used to ascertain which pupils have mastered these concepts/skills and which require additional support.

At this point, pupils not achieving the **benchmark for mastery** follow a programme of 'corrective instruction' based upon the results of the assessment, whilst those who have reached the requirements begin '**enrichment activities**', **deepening their knowledge and applying higher order thinking to the material of the unit, or assisting 'non-masters' to attain mastery.**

A second formative assessment determines whether expected progress has been made by the remainder (a class result of >80% being the expectation), after which the class is ready to advance to the next unit, its content underpinned by the secure knowledge of previous units. At this point, pupils falling below expectations will be set additional tasks in preparation for re-testing.

After the completion of a number of units (approximately three to four), a longer summative assessment is given, testing the amalgamation of previous units.

It is worth noting that this model does not define the final assessment of a unit as 'summative'. The subtle implication here, crucial to the distinction between a 'mastery' and traditional 'spiral' curriculum, is that the end of a unit does not signify a change to something new, but a continuation to the next logical step in the pursuit of complete mastery of the subject.

1.4 Why a Mastery Curriculum?

With major changes in the expectations of learners, particularly at KS 4, where terminal examinations form the absolute basis of the majority of subjects, it is crucial that the Academy prepares pupils for the challenges ahead by ensuring that our curriculum promotes the effective retention of subject knowledge and efficient recall of that knowledge. Research shows that a mastery curriculum, if implemented properly and committedly, can have significant impact on pupil outcomes. In particular, such models have been seen to:

- Narrow the attainment gap; pupils with lower starting points making the most rapid progress;
- Accelerate learning, by ensuring that skills and knowledge are more effectively embedded, leading to less time spent returning to work already covered;
- Motivate pupils through the social dimension of group-paced learning, with classes working together to achieve >80% mastery;
- Improve the retention of learnt material and its later application, by focusing on regular assessment practice which aids in the formation of long-term memories.

2.0 Present Capacity for Implementation

2.1 KS 3 Indicative Competencies

The writing of agreed 'Indicative Competencies' for each subject at KS 3 has necessarily defined the core knowledge, skills and abilities crucial to these subjects. This satisfies the initial requirement in the design of a mastery curriculum. The acquisition of these competencies must therefore be the focus of curriculum planning.

Once embedded, pupils at KS 3 will be capable of **visualising a path to mastery** in each subject and recognising their place along this path.

2.2 'DRAFT'

The implementation of DRAFT tasks satisfies another core criterion of the mastery curriculum – curriculum design hinges on effective assessment and feedback.

Within a mastery curriculum model, DRAFT lessons will be scheduled immediately after each formative assessment and feed into the selection of corrective tasks or enrichment activities to suit the individual learner. This additional outcome will also serve to promote greater pupil autonomy, a crucial skill considering the challenges of the new GCSE (9-1) syllabi.

2.3 KS 4 Curriculum

Across all subjects, the transition to new GCSE syllabi necessitates the writing of new schemes of work and the careful consideration of course demands. The introduction of a mastery curriculum at a time when schemes of work should be under review should be viewed as pertinent timing.

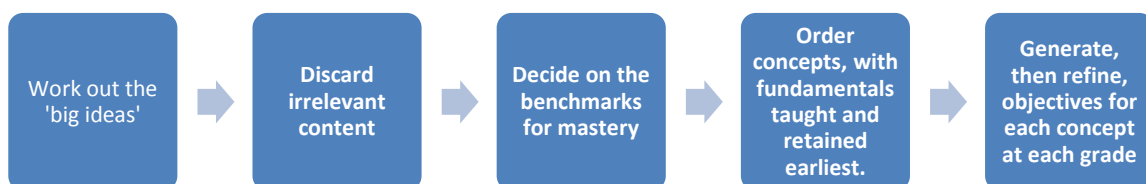
3.0 Implementation

3.1 Shared Vision

Before any further steps can be taken, all staff must embrace the core belief that virtually all* learners have the capacity to achieve to a high academic standard given the correct conditions. By extension, this belief must be **promoted to all pupils**.

3.2 Curriculum Design

Taking the KS 3 Indicative Competencies and new GCSE course content as the starting points, departments will follow the following steps to produce a programme of study* suitable for teaching using the mastery model:



3.2.1 Learning Goals and Benchmark for Mastery

Learning goals have already been determined at KS 3 (being synonymous with the Indicative Competencies) and will be defined in the examination syllabus at KS 4. Within this content lie the 'big ideas' for each subject – the essential knowledge, skills and concepts you must cover to prepare pupils for success.

For each group, a benchmark for mastery – the lowest grade accepted as a successful outcome for any individual within that group – must be agreed upon. Agreement will be dependent on senior line manager approval.

It must be noted that learning goals may change based on feedback from assessment and that adaptability to the needs of the class is an integral feature of a mastery approach.

3.2.2 Learning Units

The course will next be split into units, based on a logical progression through the learning goals. This approach is distinct from a topic-based approach, whereby units cover material in an arbitrary order. Instead, units should be arranged so that **prerequisite skills are covered before more complex application is demanded.**

It is also important to consider the amount of time required for a learning unit. In a mastery curriculum, units are as long or short as they need to be. **Six half terms in an academic year does not necessarily mean six learning units.**

3.2.3 Learning Objectives

For each lesson within a unit, the objectives of that lesson and how they fit into the wider context of the unit and scheme should be made explicit to learners. They should be referred to throughout a lesson.

Many practitioners advise that curriculum design be informed by *Bloom's Taxonomy of Educational Objectives* (see appendix 5.1.1).

3.3 Assessment

The design of assessments is crucial to the success of a mastery curriculum and follows a set of basic principles:

- Formative assessments must **only** test the content of the unit being taught;
- Formative assessments must test **all** the content of the unit being taught;
- Assessments should, wherever possible, allow for binary (right/wrong) marking;
- Feedback should be given as close as possible to the assessment (either within the lesson or by the next lesson);
- Marks must be numerical to allow for a cut-off to be applied.

Possible approaches to assessment design include:

- More extended assessments with clear criteria for awarding marks for each element of the unit;
- Online assessments that allow for either immediate feedback or collation of results in a short space of time;
- Carefully worded multiple choice questions, requiring clear comprehension of the wording of each option – particularly effective for formative.

Departments will determine the most appropriate forms of assessment for their subject within these criteria.

3.4 Classroom Culture and Pupil Attitudes

The success of a mastery curriculum is dependent on a classroom culture in which all pupils believe that success is possible and commit to attaining mastery.

In advance of teaching, the following will take place to begin promoting this culture:

- Assemblies for all years to explain the mastery curriculum and promote the belief that all pupils are capable of attaining mastery;
- A parents' information evening;
- Materials for distribution to parents;
- Prominent displays across the school promoting mastery.

When planning the initial unit to be taught, teachers should look for 'small wins', designed to reinforce the expectation of success for all.

3.5 Deep Learning

Mastery is built on the premise that information is only fully retained if learnt *in depth*.

A distinction is therefor made between **surface learning** and **deep learning**:

Deep	Surface
Emphasis is internal, from within the student	Emphasis is external, from demands of assessment
Relates previous knowledge to new knowledge	Focus on unrelated parts of the task
Relates knowledge from different courses	Information for assessment is simply memorised
Relates theoretical ideas to everyday experience	Facts and concepts are associated unreflectively
Relates and distinguishes evidence and argument	Principles are not distinguished from examples
Organises and structures content into coherent whole	Task is treated as an external imposition

In developing a teaching & learning approach to complement our mastery curriculum, teaching staff will need to understand the distinctions and apply them. Pupils facing the demands of new GCSE courses can no longer rely on shallow learning and the hope of retaining information for long enough to complete their examinations.

3.6 Timeline for Implementation

3.6.1 Autumn 2016

- The mastery curriculum policy is introduced to Heads of Department at a Head of Department meeting – 1st September 2016
- The mastery curriculum model is introduced to staff, with timeline for implementation – INSET day 21st October 2016
- Heads of department are given clear expectations as to schemes of work and assessment – INSET day 21st October 2016

3.6.2 Spring 2016

- CPD is delivered to heads of department on writing schemes of work – Twilight session 16th January 2017
- CPD is delivered for all staff on teaching within a mastery curriculum – Twilight session 16th January 2017
- Time is dedicated to the writing of schemes of work – this will require a significant amount of explanation - Twilight session 16th January 2017

3.6.3 Summer 2016

- A mastery curriculum unit to be trialled in year 7 within all subjects
- Impact assessment to be completed by the end of term

3.6.3 Academic Year 2017-18

- A mastery curriculum is taught in all subjects* across years 7, 8, groups from September;
- QA checks to be timetabled, termly.

3.6.4 Beyond 2018

- The mastery curriculum is applied as the first mastery cohorts reach that year of study: 2018-19 – Year 9, 2019-20 – Year 10, 2020-21 – Year 11*.

4.0 Practical Considerations

For our mastery curriculum to be successful, the following aspects of the Academy's wider policies will need to be examined and amended where appropriate.

4.1 Setting Pupils

Some proponents of a mastery curriculum argue that, as the central belief is in near universal mastery, setting pupils is unnecessary. In practical terms, however, the academy sets on a number of criteria which may aid in curriculum delivery.

For this reason:

- The benchmark for mastery will be different for each set, determined and agreed in advance;
- FFT forecast grades must be seen as a minimal expectation, with progress towards or beyond the benchmark being the primary aim of all pupils;
- In subjects where sets span multiple departments, setting should be carefully considered between departments to facilitate appropriate benchmarks.

4.2 SEN

'Virtually all learners can learn all important academic content to a level of excellence.'

The inclusion of the word 'virtually' here is in large an admission to the realities of teaching some learners with special educational needs. Support for such learners will need to be carefully planned, whilst not betraying the central belief itself.

SEN pupils are likely to be the primary group in danger of failing to meet the benchmark after the second formative assessment stage, and a strategy for further corrective instruction will need to be in place to support this:

- LSA deployment inside and outside the classroom must be strategically planned and effectively monitored;
- Homework club must be structured to allow for targeted corrective instruction;
- Set-dependent benchmarks must be appropriate for the lowest sets, to avoid large numbers of pupils consistently falling below the benchmark;
- A strategy must be in place to organise targeted activities for the less able pupils who are not meeting benchmarks.

4.4 AMA

On the other end of the spectrum, AMA pupils will be those most likely to reach enrichment activities for each unit. These will need careful planning to ensure that:

- Higher order thinking skills are developed;

- Unnecessary repetition of similar tasks is avoided;
- Where AMA pupils are used to support 'non-masters', that this is as valuable for both parties.

Specific CPD will also be required to ensure that challenging activities will be planned and delivered to our most able pupils. This is an important development area for the Academy.

4.5 Subject-specific Variation

Studies have been conducted across a number of subject areas into the effectiveness of a mastery curriculum approach. Most frequently studied have been Mathematics, where the most evidence for impact currently lies, but also in English.

Each subject will need to consider the following:

- For knowledge-rich subjects, how will high order skills be developed?
- For practical subjects, how will 'soft skills' be quantified for the purpose of effective assessment?
- For all subjects, what is the correct approach for the competencies laid out?

4.6 Marking and Feedback

A great deal of work is already under way to improve the quality of marking and feedback within the Academy. As the mastery model places effective feedback at its heart, this work must continue. Without it, a mastery curriculum cannot be effective.

4.7 Homework

Homework tasks, particularly for AMA pupils, are likely to link to enrichment activities. The following should be considered before appropriate amendment are made to the current policy:

- Homework tasks for AMA pupils must be specifically linked to enrichment activities for each unit;
- For such pupils, autonomy could be given as to the specifics of homework tasks;
- Homework should be as effective in supporting non-masters through corrective instruction. This may include access to online resources and practice activities.

4.8 CPD

As the mastery curriculum is set up, it will place a significant demand on CPD for teaching and support staff, as well as leadership at all levels. This will need to be carefully factored into the planning of CPD across the academic year.

CPD for LSAs will be key to ensuring success of the mastery curriculum.

5.0 Appendices

The following appendices are including as reference when implementing the mastery curriculum detailed above.

5.1 Models of Learning

5.1.1 Bloom's Taxonomy of Educational Objectives

Table 1: Bloom's Taxonomy of Educational Objectives for Knowledge-Based Goals

Level of Expertise	Description of Level	Example of Measurable Student Outcome
1. Knowledge	Recall, or recognition of terms, ideas, procedure, theories, etc.	When is the first day of Spring?
2. Comprehension	Translate, interpret, extrapolate, but not see full implications or transfer to other situations, closer to literal translation.	What does the summer solstice represent?
3. Application	Apply abstractions, general principles, or methods to specific concrete situations.	What would Earth's seasons be like if its orbit was perfectly circular?
4. Analysis	Separation of a complex idea into its constituent parts and an understanding of organization and relationship between the parts. Includes realizing the distinction between hypothesis and fact as well as between relevant and extraneous variables.	Why are seasons reversed in the southern hemisphere?
5. Synthesis	Creative, mental construction of ideas and concepts from multiple sources to form complex ideas into a new, integrated, and meaningful pattern subject to given constraints.	If the longest day of the year is in June, why is the northern hemisphere hottest in August?
6. Evaluation	To make a judgment of ideas or methods using external evidence or self-selected criteria substantiated by observations or informed rationalizations.	What would be the important variables for predicting seasons on a newly discovered planet?

Table 2: Bloom's Taxonomy of Educational Objectives for Skills-Based Goals

Level of Expertise	Description of Level	Example of Measurable Student Outcome
Perception	Uses sensory cues to guide actions	Some of the coloured samples you see will need dilution before you take their spectra. Using only observation, how will you decide which solutions might need to be diluted?
Set	Demonstrates a readiness to take action to perform the task or objective	Describe how you would go about taking the absorbance spectra of a sample of pigments?
Guided Response	Knows steps required to complete the task or objective	Determine the density of a group of sample metals with regular and irregular shapes.
Mechanism	Performs task or objective in a somewhat confident, proficient, and habitual manner	Using the procedure described below, determine the quantity of copper in your unknown ore. Report its mean value and standard deviation.
Complex Overt Response	Performs task or objective in a confident, proficient, and habitual manner	Use titration to determine the K_a for an unknown weak acid.
Adaptation	Performs task or objective as above, but can also modify actions to account for new or problematic situations	You are performing titrations on a series of unknown acids and find a variety of problems with the resulting curves, e.g., only 3.0 ml of base is required for one acid while 75.0 ml is required in another. What can you do to get valid data for all the unknown acids?
Organization	Creates new tasks or objectives incorporating learned ones	Recall your plating and etching experiences with an aluminum substrate. Choose a different metal substrate and design a process to plate, mask, and etch so that a pattern of 4 different metals is created.

Table 3: Bloom's Taxonomy of Educational Objectives for Affective Goals

Level of Expertise	Description of Level	Example of Measurable Student Outcome
Receiving	Demonstrates a willingness to participate in the activity	When I'm in class I am attentive to the instructor, take notes, etc. I do not read the newspaper instead.
Responding	Shows interest in the objects, phenomena, or activity by seeking it out or pursuing it for pleasure	I complete my homework and participate in class discussions.
Valuing	Internalizes an appreciation for (values) the objectives, phenomena, or activity	I seek out information in popular media related to my class.
Organisation	Begins to compare different values, and resolves conflicts between them to form an internally consistent system of values	Some of the ideas I've learned in my class differ from my previous beliefs. How do I resolve this?
Characterization by a Value or Value Complex	Adopts a long-term value system that is "pervasive, consistent, and predictable"	I've decided to take my family on a vacation to visit some of the places I learned about in my class.

5.1.2 Burch's Four States of Competence (Four Stages of Learning)

STAGE 1 – Unconscious Incompetence – *I don't know what I don't know*

STAGE 2 – Conscious Incompetence – *I know what I don't know*

STAGE 3 – Conscious Competence – *With thought, I can do it*

STAGE 4 – Unconscious Competence (or **MASTERY**) – *I can do it without thought*

5.2 Related Pedagogy

5.2.1 Grit

Angela Duckworth's work on Grit as a predictor of academic attainment has clear cross over with mastery.

According to her "Grit is the tendency to sustain interest in and effort toward very long-term goals".

<http://angeladuckworth.com/>

5.2.2 Growth Mindset

Championed by Carol Dweck, the fostering of a growth mindset has clear applications alongside a mastery curriculum.

Mindset explains:

- Why brains and talent don't bring success;
- How they can stand in the way of it;
- Why praising brains and talent doesn't foster self-esteem and accomplishment, but jeopardizes them;
- How teaching a simple idea about the brain raises grades and productivity;

<http://mindsetonline.com/index.html>