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A WHOLE COLLEGE APPROACH

A Guide for FE colleges

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Contents

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1. Introduction

The Whole College Approach (WCA) project began in April 2021 as an additional strand of the Centres for Excellence in Mathematics (CfEM) programme after the publication of findings from the Nuffield-funded Mathematics in Further Education Colleges project (MiFEC). An initial group of ten further education (FE) colleges completed a pilot (May 2021–July 2022) before further funding was made available to continue the programme. The original ten colleges continued their WCA projects thereafter and were joined by a further six colleges in May 2022. The WCA project concluded at the end of the CfEM programme in March 2023.

The MiFEC[1] project had evidenced wide agreement from a broad cross-section of staff in England's FE colleges that mathematics is important and that students with low attainment should be improving their mathematics skills, but there was also evidence that:

- students can receive inconsistent messages, explicitly and implicitly, about the need to engage with mathematics
- combinations of strategic or operational approaches can produce variations in students' experiences and sometimes hinder their participation or progress.

Colleges in the MiFEC project had attempted to improve the organisation and management of their mathematics provision by adopting ideas from other colleges, but these approaches were often unsuccessful in their own organisational settings. Differences in college contexts (e.g. number of college sites, staffing structures) were typically overlooked and solutions were sometimes attempted without thoroughly investigating the root causes or securing the commitment of the teachers and managers involved.

The WCA therefore highlights the importance of strategic thinking with appropriate consideration of contextual differences between colleges. It also prioritises the formation of a cross-college team with representation from different areas of the college and levels of management and/or teaching, so that multiple perspectives can be considered (see Sections 3 and 4 for further information).

The WCA is framed by well-established theoretical ideas about systems thinking, organisational learning and complex change in large organisations such as FE colleges.

The overarching aim of the WCA project was to *improve the understanding, planning and implementation of WCAs for mathematics in large FE colleges,* with the objectives to:

- translate the MiFEC and other related 'whole organisation' research into practice
- build sector knowledge about WCAs
- develop, pilot and research the use of WCA self-assessment tools
- develop, pilot and research mechanisms to support practitioners in the development of a WCA
- produce stand-alone resources for improvement in WCA to mathematics
- produce case studies of the implementation of WCA in the FE college context.

This guide introduces the WCA that was implemented by FE colleges as part of the CfEM programme from 2021–23. Although the WCA approach has been trialled and researched for the purpose of improving students' experiences of learning mathematics, it is also a process that could be used for other cross-college subjects, such as English.

The guide begins with a brief background to the WCA project, before explaining the principles upon which it is founded and outlining the process of developing a WCA. Some of the key points emerging from the research conducted during the WCA pilot (April 2021–March 2023) are included. FE colleges are also recommended to read the accompanying WCA case studies, self-assessment tasks and summary of common issues, all of which can be found on the WCA website.

[1] Noyes, A., & Dalby, D. (2020). Mathematics in Further Education Colleges: Final report. https://www.nottingham.ac.uk/research/groups/crme/documents/mifec/final-report.pdf

2. Background

For many years employers and politicians have called for the improvement of mathematics skills in England (e.g. BEIS 2017; CBI 2015; DfE 2021) and evidence from international comparisons (e.g. Kuczera et al. 2016) has reinforced this demand. When combined with clear evidence of links between mathematics skills and economic and personal prosperity (OECD 2016; Dolton and Vignoles 2002), improving mathematics skills continues to be a government priority and a particular concern for FE colleges.

The role of mathematics qualifications for entry to higher level courses or career progression is well established in the education system. GCSE mathematics continues to be the key 'gatekeeper' to many higher education courses and career pathways and is often required for entry to Level 3 programmes such as T Levels.

Mathematics is naturally embedded within vocational learning and relevant mathematics skills are therefore developed within FE's vocational study programmes. Furthermore, as a condition of funding, 16–18-year-olds without GCSE grade 4 are required to continue studying mathematics with the aim of achieving this standard.

One of the key issues evidenced in the MiFEC project was the low motivation of many GCSE resit students to retake a mathematics course, and a lack of engagement with the subject when taught in a stand-alone session. This remains a significant challenge in colleges that can be affected by organisational systems and approaches to the curriculum.

Learning mathematics skills for vocational purposes and studying for a GCSE mathematics qualification may appear to be very different activities for students. The curriculum, or a college's structures and culture, can reinforce these differences but ultimately both parts of students' study programmes share an aim of developing better understanding and application of mathematics. Students' learning of mathematics is therefore a shared responsibility and best supported by a collaborative approach.

However, the evidence shows that efforts to improve students' mathematics are too often fragmented, with mathematics and vocational learning largely disconnected.

3. What is a Whole College Approach?

The WCA should be understood primarily as a **process**; one by which organisational change is achieved. This process is built on a set of key concepts and theoretical principles drawn from studies of organisational behaviour, organisational culture, complex systems and learning organisations. Some of the key concepts are summarised briefly here.

- **Organisational change** takes time and requires a well-designed change management strategy. Change in large, complex organisations does not follow a simple linear path and there can be unintended consequences from interventions in addition to those planned (Mason 2008). Organisational change is often considered as a series of phases in which the people involved gradually adopt new ways of working (Senge et al. 1999; Rosenbaum et al. 2018).
- **Organisational culture** comprises the corporate assumptions and accepted behavioural norms among a group of people. It can encompass the whole or part of an organisation. The culture is founded on sets of shared values and beliefs which affect attitudes and the ways in which people conduct their work. Individuals can influence the organisation culture but are themselves affected by it (Kondra and Hurst 2009; Hartnell 2011; Schneider et al. 2013). Changing the culture requires changes in beliefs.
- **A learning organisation** is one that actively supports the learning of its members, but also engages in collective self-analysis and reflection that leads to ongoing transformation. Such transformation might be catalysed by changes in the external environment, motivated from within, or a combination thereof. In an educational institution, the learning of both students and staff is a priority and the development of a culture of inquiry, innovation and exploration (Nyhan et al. 2004; Kools and Stoll 2016).

In a WCA, the responsibility for students' learning of mathematics is increasingly shared such that all staff, irrespective of role and level, become actively involved. *Figure 1* shows the stages of development of shared responsibility for mathematics in a WCA, from fragmented strategies and practices, through increasing coordination and collaboration, to fully active participation.

Figure 1: Development of shared responsibility in a Whole College Approach

As part of a WCA process, it is important to explore where the college lies on this continuum, using the perspectives of staff in different roles within the organisation. This in turn informs an analysis of the college's existing strengths and weaknesses with respect to a WCA and determines a starting position for the organisation. It can also provide a measure on which to self-assess progress over time.

The WCA is underpinned by a set of five key concepts summarised as the **CHIME framework** (see *Figure 2*). This framework assumes that an effective WCA is increasingly 1. contextualised, 2. holistic, 3. interconnected, 4. multidimensional, and 5. evaluative. WCA teams use these concepts as organising principles for their work. The concepts underpin the self-assessment tasks and are a helpful reference point throughout a college WCA project.

In a process of organisational change, both the formal and informal working of the organisation need to be considered. A fundamental principle of the WCA is the simultaneous examination of both the formal **systems and processes** of the college and the organisational behaviours associated with the **people and culture** involved.

Since the aim of a WCA is to develop shared responsibility, it is important that this is informed and guided by a cross-college group with appropriate representation from teaching staff and managers. These representatives should work together respectfully and collaboratively to establish themselves as a team with a micro-culture that resembles the collaborative and participatory approach that they would want to see developed more widely in the college through the WCA process. (A recommended composition for this group is outlined in Section 5.)

Contextual
Context matters. A WCA to mathematics must account for the particular contextual features of the individual college, in addition to external factors (national and local) that frame the implementation of mathematics policy and practice in FE.
Holistic
Colleges are complex systems of people and processes with the whole being *more than the sum of the parts.* Understanding the big picture, and the relationships between the parts and the whole, is key to a WCA.
Interconnected
There are many connections in a college system. Causes and effects are not always simple, and change can be unpredictable. WCA interventions can fail if the interactions between processes (and people) are not well understood.
Multidimensional
WCA problems have multiple dimensions, and these are perceived and understood from different points of view. Valuing such diversity can aid understanding and the planning of improvement for mathematics.
Evaluative
Understanding and improving a WCA for mathematics requires effective data generation and information exchange. It is important to develop a culture of self-assessment, critical inquiry, evidence-building and collective analysis.

Figure 2: Overview of the CHIME framework

4. Reasons for developing a Whole College Approach

The WCA process described in this guide was used by 16 FE colleges over a period of one to two years during the CfEM project. It was accompanied by a well-designed research evaluation of the programme and its impact. The WCA case studies (see the WCA website) highlight some of the positive effects of using the WCA process. These include increased communication and collaboration between staff, improvements in student attendance, and closer connections between mathematics and vocational learning which allow opportunities for the development of mathematics understanding to be maximised. Further information about the positive effects can be found in the report on the WCA pilot (2021–22).

FE colleges are complex organisations comprised of various stakeholder groups (e.g. governors, managers and teachers). Each group has their own responsibilities and priorities, depending on their role. There are multiple reasons for developing a WCA for mathematics, some of which are listed here.

Stakeholders may identify different reasons for developing a WCA because their roles involve different strategic and/or operational priorities and understandings of how to improve the college. There are therefore different motivations for developing a WCA for mathematics, some of which are listed here.

Motivations for developing a WCA might include:

- National and local economies require a workforce with skills in mathematics. If FE colleges are to provide skilled workers for local industries and business, and serve their local communities well, then mathematics needs to be high on the college agenda for all staff in every curriculum area.
- Mathematics is often one of the lower performing areas in FE colleges and student achievement in mathematics is a common target for improvement. Attendance at mathematics sessions is typically lower than for vocational programmes and a contributory factor to low examination pass rates.
- The condition of funding can result in financial losses if mathematics attendance does not meet requirements. With current levels of funding for FE colleges, few can afford to forfeit income due to students not engaging with mathematics.
- Managers and teachers of mathematics spend large amounts of time reporting on student attendance, notifying parents or other staff, and taking other action to follow up when a student has not attended. Improved attendance would release key staff to focus on their core activities.
- Vocational areas are often accountable for attendance and achievement rates in mathematics, even if they do not manage the teaching staff or oversee the curriculum. They too may spend much time viewing reports and responding to attendance issues for mathematics concerning their students.

5. Developing a Whole College Approach

The WCA is a process that is designed to produce positive and sustainable organisational change and establish ways of working that facilitate ongoing incremental improvements in the management and organisation of mathematics in a FE college. The research evaluation of the WCA pilot (2021–23) generated important insights into the conditions for effective design and delivery of WCA projects as well as some of the barriers that threaten their success.

Colleges benefitted greatly from working with an expert facilitator with deep understanding of the FE sector and of organisational change processes who could provide insights into the research base and current challenges in post-16 mathematics learning. The colleges involved in the WCA pilot valued the independent 'critical friendship' they received from their external expert and were motivated by externally set goals. They also benefitted from the cross-pollination of ideas, strategies and struggles from across the sector that the external expert could bring.

The WCA programme is outlined in the following subsections. Although the key elements of the process are described as if they could be undertaken independently, the strong recommendation from colleges in the pilot is that maximum benefit from the WCA approach would be realised with the support of an external trained facilitator in the WCA approach. Also, ideally, colleges should have the opportunity to work in parallel with other colleges, not least to share progress from time to time and receive peer feedback.

The WCA process is structured into four broad phases.

1. **Discovery phase**: The college identifies an initial problem or area for improvement and establishes a cross-college team to lead their WCA intervention. This team engages in self-assessment tasks to explore the context of their problem, assess the current situation, and identify possible affordances and constraints.
2. **Planning phase**: The college WCA team builds on the outcomes of their self-assessment tasks to redefine the problem they intend to solve, and identify the interlinked issues, affordances and constraints.

   They develop a focused action plan with clear aims, objectives, timescales, responsibilities, and evaluation methods.
3. **Intervention phase**: The college WCA team implements their action plan, and reviews progress at intervals, making adjustments where appropriate.
4. **Review phase**: The college evaluates the impact of their action plan and uses what they have learned to inform longer-term WCA plans.

5.1 Getting started

There is no best time to start a WCA project but to give the greatest chance of starting strongly and moving forward quickly, there must be a good level of **WCA project-readiness** and **stability** in both the college and WCA team. It is also important to consider the normal planning cycle in the college so there is sufficient time to develop any interventions that are linked to fixed points in the college year (e.g. enrolment, induction).

Before commencing a WCA process the college should bring together a group of staff with the aim that they become an active and **collaborative cross college team** to lead the WCA, with appropriate representation of staff in different roles. This is an important first step to creating a more collaborative culture across the whole college. WCA research highlights the need for cross college representation from different areas and levels of the organisation. A key design feature of the WCA programme was the composition of this team, which should include appropriate horizontal representation (mathematics and vocational) and vertical representation (teacher, middle manager, senior leader).

A typical WCA team would include:

- a member of the senior leadership team
- a manager with responsibility for mathematics
- a vocational manager
- a vocational teacher
- a mathematics teacher.

Staff in these roles bring different understandings of the college, specific knowledge and expertise, and different perspectives of the issues with

mathematics to the group. The composition of the team is designed to capture views from multiple perspectives that can enrich understanding of what the problem really is and ways of improving the situation that would work for colleagues in different roles. In particular, colleges should ensure a senior leader is fully committed to the group since they bring a more holistic view of how the college works and can influence strategic decisions where necessary.

The first task for this group is to develop a **collaborative culture** in which open and honest conversations can take place, and respect for different roles and perspectives is encouraged. The group may need to learn how to work collaboratively while thinking critically about the issues, with all team members actively participating, irrespective of role or seniority. The WCA pilot evaluation highlights the need to 'get the right people in the room', who can become enthusiastic and reliable 'early adopters' of the approach and who can influence others.

Secondly, the team should identify an **initial issue or area** on which to focus. This may not be the issue they eventually decide to address but it acts as an early focus for the self-assessment and analysis that are carried out in the Discovery phase.

During the Discovery phase, the team work on **self-assessment tasks (SATs)** to develop a shared understanding of the college context in which they work (SAT1) and the existing climate (SAT2), before working collaboratively on an analysis of the problem (SAT3 and SAT4). In this Discovery phase the team aim to develop open discussions in a culture of mutual respect and learn to work collaboratively. It is important to develop this way of working with a core team early on since a successful WCA is dependent on working in a similar way more widely across the college.

The SATs are designed to help colleges think about the problem they have identified and the context they are working in before developing an action plan. It is important not to rush into planning before the team has thoroughly explored the issues that surface in their discussions.

Colleges should therefore expect to spend several sessions working together on the SATs. This process will ensure that the team has identified root causes rather than just surface issues. Those involved in the pilot emphasised the importance of spending plenty of time on the self-assessment process and reported the benefits of exploring the issues thoroughly before making an action plan.

Further details of some SATs that can be used by colleges can be found on the website in a separate section entitled 'self-assessment'. Please note that these versions are designed for use by colleges that do not have any external support and are therefore somewhat different from those used in the WCA pilot by external facilitators.

Some colleges will inevitably find it easier to get started with their WCA activity than others. There are several reasons why this happens. Colleges should consider their 'WCA-readiness' and prepare accordingly. Factors that may well influence progress in the early stages of a WCA are summarised here.

- **The experience of the WCA team lead** and their **position in the organisation**. Do they have sufficient experience and influence to recruit team members from across the organisation and arrange meetings?
- The **existing culture** in the college. To what extent is there already a collaborative culture in the college, either in curriculum teams or across levels and departments?
- The extent of **pre-project collaboration** between team members. Do the team members already know and trust each other? How easily will they develop an effective way of working together?
- The engagement and **commitment of a senior leader**. Who in the senior leadership team has the interest and can make a commitment to active involvement with WCA?

In summary, the actions shown in *Figure 3* provide a quick guide to the first steps of developing a WCA.

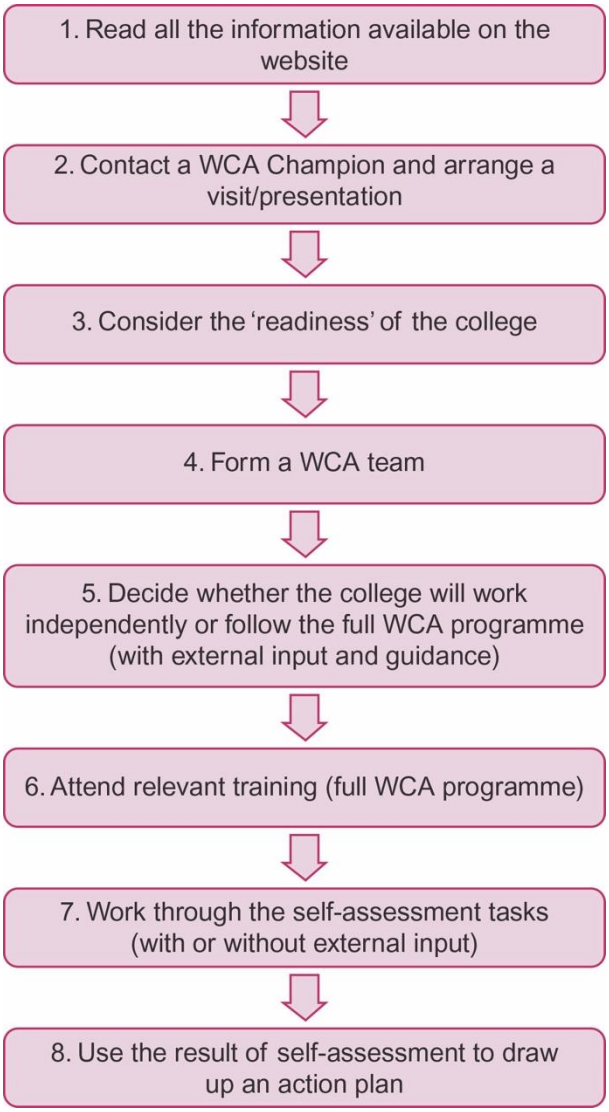

Figure 3: The steps of developing a WCA

5.2 Planning and implementation

During the planning and implementation phases, the college WCA team uses the results of the self-assessment and problem analysis to focus on a key aim and specific objectives. The team works to redefine the problem that it intends to address in the light of their discussions and focuses on a limited number of achievable objectives, ideally those that team members believe will have the greatest impact on the problem. This might mean that only one or two vocational areas are included in the first year of a WCA, with a view to scaling out in subsequent years.

There is no prescriptive format for a WCA action plan, but colleges found it helpful to commence with a statement of the problem they were aiming to address, followed by their aims, specific objectives, actions (with target dates), timescale, review points and methods of evaluating the impact. They also noted any connected issues and made space for further notes as they progressed with their intervention.

Colleges in the pilot agreed on several key factors that helped make their WCA interventions successful. These included the support they received from external experts, the self-assessment tasks and the time devoted to exploring the issues before trying to address them. Having an external facilitator's guidance through the self-assessment tasks, both in meetings and email exchanges, was important in brokering honest conversations, encouraging collaboration, and deepening problem analysis. The schedule of meetings and submissions provided a useful framework that helped keep WCA teams 'on track'. Pilot WCA colleges agreed that without such external prompting, support and accountability, it would have been difficult to sustain their WCA work throughout the year.

Most pilot colleges experienced **unexpected challenges** that affected their WCA progress. In some colleges the challenges were disruptive and took time to overcome, especially when they affected either the WCA team membership, or other people involved in the intervention, or the systems they were working with.

The situations that are likely to affect progress with developing a WCA are summarised here.

- **College reorganisation**: staff temporarily become less keen to be involved in a new initiative.
- **Changes of role** due to reorganisation: new relationships need developing for WCA.
- **Changes in team membership**: members need time to adapt to new responsibilities and new relationships, and new members have to integrate into the culture and ways of working of the team.
- **College mergers**: the staff and systems that WCA teams were working with may change and action plans may therefore need reviewing.

It is important therefore for a WCA team to meet regularly through all phases of their WCA activity so they are able to respond to changing circumstances or roles.

5.3 Review and evaluation

WCA teams can expect to make small changes to their action plans for these to remain relevant and effective. Organisations are continually developing and actions that seemed appropriate in the early stages may need adjusting to have the intended impact. Through the WCA activity, new information and insight may also be generated that the team need to consider. WCA teams are encouraged to be continually reflecting and reviewing their plans, but it is useful to fix some formal review dates in advance. In the pilot, these review points were also valuable opportunities for colleges to discuss challenges, changes and achievements with an external expert.

Evaluation is one of the key concepts of the WCA programme and is embedded into the process from the Planning phase onwards. Although WCA teams are dealing with complex systems and interconnected elements, it is important that data is generated from which an evaluation of the effects of an intervention can be made. WCA teams are recommended to consider how such data can be generated at the Planning stage and include this in their action plans. Rather than relying solely on data generated at the end of the intervention, it is useful to consider interim data about progress that the WCA team can use in their reviews. In this way, adjustments can be made to improve the intervention, or new forms of data generation may be considered to assist in evaluating the impact.

6. Scaling and sustaining a Whole College Approach

To further develop and sustain a WCA, it is generally important to:

- use the WCA principles and process in the way intended so that organisational changes are fully adopted by all those involved
- continue to use the principles and process over time until they become fully embedded into the way the college works.

The WCA process is built on the principle that sustainable organisational change occurs when changes in individual beliefs and behaviours are so widespread that they become an accepted part of the culture and so a new way of working becomes common practice. Achieving culture change is dependent on altering individual beliefs about what is worthwhile and effective. A strategy used in WCA is to involve staff from different areas of the college and different roles in the process, to inform the analysis of the problem and become co-creators of an action plan.

When initially developing a WCA, a college may first decide to focus on improvements in one or two vocational areas. After a review and evaluation of the impact and what has been learned, the college may undertake some scaling to extend their initial work. This may take the form of one of three types of scaling (Moore et al. 2015), as summarised here, each of which brings new challenges and opportunities.

- **Scaling out**: extending the 'reach' of WCA across the college by commencing similar activity in other vocational areas. This may involve repeating the Discovery phase, including the self-assessment tasks, with another group of staff to explore the new context and climate since these may differ from the initial WCA area.
- **Scaling up**: elevating a particular practice that has been successful, so this becomes college policy.
- **Scaling deep**: trying to change the beliefs and culture so the organisational changes are accepted by staff and adopted into the way they work.

When trying to bring about organisational change, a WCA recognises that the transition may include several stages and involve multiple groups of people with different responses. Typically, a successful change starts with a small group of 'early adopters' who are enthusiastic and then influence the 'middle majority' (Rogers 2003; Barclay and Bell 2007). However, a WCA change programme might also encounter a small group of reluctant participants who take longer to be convinced and are slow to adopt new practices.

Instability in the college (see Section 5.2) remains a threat to the development and continuation of a WCA at any time. Colleges should be prepared to revisit the principles and repeat activities such as the self-assessment tasks from the Discovery phase if there are staff changes or other disturbances such as system changes, a merger or reorganisation, to ensure those who become involved have a shared understanding of the WCA principles and processes.

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