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# Mathematics in England's Further Education Colleges: a whole college approach

The Mathematics in Further Education Colleges Project:  
Working document 2

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## A Whole College Approach

### Background

This brief working paper outlines an understanding of a *whole college approach* to the provision of mathematics teaching and learning in England's FE colleges, based on findings from the Mathematics in Further Education Colleges (MiFEC) project. This forms the foundation for further research and development into how such approaches might be used to support improvements in student progress and achievement.

The MiFEC project evidenced broad agreement from a wide cross-section of staff in FE colleges that mathematics was important and that students with low attainment should be improving their mathematics skills. Yet practices across colleges did not always reflect this aspiration. As a result, students received inconsistent messages, explicitly and implicitly, about the need to engage with mathematics. Furthermore, there was evidence of strategic or operational approaches leading to variations in students' experiences and sometimes hindering their participation and/or progress.

### Aims

A Whole College Approach (WCA) is a coordinated effort to improve students' mathematics skills and confidence alongside their vocational or academic studies. This includes the skills needed for specific vocations, those for progression to further study and for general life and employability. In a Whole College Approach, this becomes a shared responsibility, supported by all staff through their active engagement in a collaborative effort to help students develop their mathematics skills.

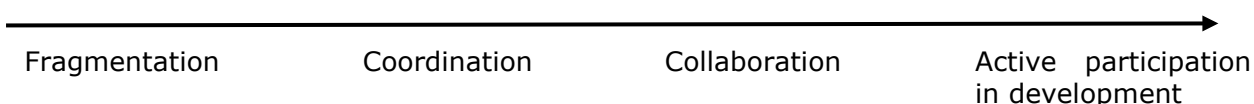
### The whole college approach

The MiFEC project highlighted several areas of particular importance in a WCA. The list provides some examples that might be considered in whole college development but these should be viewed as interconnected rather than separate areas:

- Leadership and management
- Strategic planning
- Structural arrangements
- Operational systems (and their implementation)
- Curriculum (and classroom practices)
- Organisational culture

The MiFEC project provided evidence of some of the ways in which a WCA might work but also highlighted the context-specific nature and limited transferability between colleges of the actions required. MiFEC provides some key principles to guide development of a WCA but colleges need to identify their own action plans and find solutions to problems that are appropriate for the contextual conditions.

As a first step, colleges might consider where they currently stand on a continuum from localised and fragmented approaches to active participation from all staff for each of the above areas.



The following examples from MiFEC case studies demonstrate what effect a WCA might have on the six areas listed above.

*Leadership and management* is seen as a shared responsibility across horizontal strata and vertical lines of management. This involves vocational managers at all levels and the Senior Leadership Team (SLT). In a WCA, decisions are made collaboratively, responsibilities are well

defined and there is open communication between all staff. The college holds regular meetings of a group of SLT members, middle managers, curriculum leads and teacher representatives at which the members share their issues concerning mathematics provision and tackle these collaboratively.

*Strategic planning* supports the development of students' mathematics skills, through the deployment of financial resources or the development of appropriate progression pathways for mathematics. The college offers incentives to attract high-quality mathematics teachers, employs skilled staff to provide extra support for mathematics outside class, or focuses on developing students' skills in mathematics rather than solely on examination performance.

*Structural arrangements* vary between colleges due to contextual factors (e.g. size, number of sites, vocational offer and distribution) but these will include effective lines of communication, either within the main structure, or in the form of additional lateral connections to strengthen coordination and collaboration. For example, in a centralised mathematics staffing structure, there are designated link tutors to vocational areas who liaise about curriculum and operational issues.

*Operational systems* are designed to encourage student participation and engagement with mathematics by considering their responses, developing appropriate systems and achieving consistent implementation. For example, the college fixes mathematics sessions on timetables first and wraps the vocational programme around it. Vocational staff avoid arranging placements and visits that clash with mathematics sessions. Mathematics and vocational staff share responsibility for attendance monitoring and both are aware of the follow-up action taken.

Mathematics is embedded into the whole *curriculum*, including links between mathematics sessions and students' study programmes. Mathematics teachers become familiar with vocational programmes so they can refer to relevant applications and vocational teachers make links between the mathematics they use and that learned in mathematics sessions.

*Organisational culture* reflects a positive attitude to mathematics. At an individual level this affects the way in which staff in different departments:

- speak about mathematics;
- implement processes and systems;
- support mathematics skills development in their own teaching.

One of the weaknesses identified in the MiFEC project was the skills and confidence of those who are not primarily teachers of mathematics (e.g. vocational teachers). In a WCA the upskilling of vocational teachers is a priority so they communicate confidently when referring to mathematics.

## Implementation

A Whole College Approach will not look the same in every college. Each college needs to identify and understand its own weaknesses, consider how these might be addressed in the local context and develop an appropriate change management process to embed new practices consistently across the college. Planning for a WCA needs to take into account that different parts of college systems interact. A holistic, interconnected view is required to consider the linked effects of change in one area on others.

Developing a Whole College Approach involves cultural change in the attitudes and beliefs of staff, not just the development of systems and strategies. An action plan is insufficient without considering how to include all staff in a change process involving:

1. Awareness of a problem
2. Acceptance of the problem
3. Ownership of the problem.

Colleges could be better supported to develop a WCA, appropriate for their own situation, with the provision of:

- self-assessment tools to identify weaknesses and strengths;
- support to develop appropriate plans to address interconnected issues in local contexts;
- support to develop and manage an appropriate change process;
- support to develop monitoring and feedback mechanisms.

### Other approaches to whole organisational change

Evidence from the MiFEC study shows that the Whole College Approach required has some important differences compared to previous approaches used in education. For example, the Skills for Life Whole Organisational Approach focused on the central positioning of literacy, language and numeracy provision in every area from strategic leadership to classroom practice (QIA, 2005). The actual approach was constructed around seven issues directly linked to the Skills for Life Strategy (Learning and Skills Council, 2004) and, although there is some overlap with current issues (e.g. gaining support for organisational systems), others elements are not relevant (e.g. the development of partnerships). Similarly, the Whole-of-Organisation approach proposed by Coben and McCartney (2016) for literacy and numeracy in New Zealand had a specific focus, on embedding in a model that supports data-driven decision-making. Neither of these approaches addresses the range of issues for FE colleges in their current situation. The current focus on student engagement, progress and achievement in mathematics are strongly driven by the Condition of Funding and related performance measures (GCSE achievement rates and mathematics progress scores). These determine the types of Whole College Approach suitable and the issues a WCA needs to address.

### References

- Coben, D., & McCartney, N. (2016). *Beyond compliance: Developing a whole organisation approach to embedding literacy and numeracy*. In: Yasukawa, K. & Black, S. (Eds) *Beyond Economic Interests: Critical Perspectives on Adult Literacy and Numeracy in a Globalised World*, pp. 119-134. Rotterdam: Sense Publishers.
- Learning and Skills Council (2004). *Leadership and Management Programme: Learning and Skills Council Skills for Life Quality Initiative 2004-05*. London: Learning and Skills Council.
- Quality Improvement Agency (2005). *Skills for Life Improvement Programme: Improving quality through a whole organisation approach to skills for life*. Coventry: Quality Improvement Agency.