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The University of Manchester

Enabling students to become independent learners

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Transition from school to university

Intensively supported learning

Independent learning

Success at university may depend on a lot more than prior knowledge.

Area	Success characteristics	Indicators a student may struggle
Educational expectations	•Shows genuine interest in their course •Has realistic expectations of university and the workload •Is responsible for their own learning	•Shows no interest in their course •Makes negative comments about teaching styles or workload
Motivation	•Is self-disciplined with good study habits •Attends class regularly •Prepares for lectures and tutorials by doing preliminary readings and assessments •Finishes assignments on time and keeps up to date with reading and revision •Uses campus services such as the library, learning skills, seminars, IT resources, etc	•Doesn't attend class regularly •Doesn't finish and hand in assessments on time •Doesn't attend exams •Works too many hours which interrupts study time (more than 15 hours per week for full time student) •Unwilling to seek help or advice or use campus services, library, etc
Involvement	•Understands that uni is about developing personally and socially as well as academically •Gets involved in campus-based activities, clubs and societies	•Lacks friends at uni and doesn't socialise •Socialises too much •Fails to re-enrol
Wellbeing	•Has healthy eating, sleeping and exercise habits •Maintains an even keel emotionally •Is aware of and willing to use support services if needed eg. financial assistance, health service, counselling, etc •Continues to be involved in family activities	•Has excessive weight gain or loss •Has poor sleep habits •Is always tired •Appears overly anxious or down •Is self critical or has low self esteem •Is reluctant to use university support services •Avoids family activities and responsibilities

Independent learning is NOT about leaving them alone to get on with it!

Independent learning can involve peer-assisted learning, facilitated learning and use of technology.

“Independent study is a process, a method and a philosophy of education: in which a student acquires knowledge by his or her own efforts and develops the ability for inquiry and critical evaluation;
it includes freedom of choice in determining those objectives, within the limits of a given project or program and with the aid of a faculty advisor;
it requires freedom of process to carry out the objectives;
it places increased educational responsibility on the student for the achieving of objectives and for the value of goals.”

Candy P. (1991) ‘Self-direction for lifelong learning,: a comprehensive guide to theory and practice.’

‘Most students entering higher education no longer understand that mathematics is a precise discipline in which exact, reliable calculation, logical exposition and proof play essential roles’

LMS report ‘Tackling the Mathematics problem’ (1995)

‘successful students placed more importance than failing students on … understanding rather than rote learning, and the ability to work independently.’

Anthony (2010) ‘Factors influencing students’ success in mathematics’

Walkden and Scott found that mathematics undergraduate students:
‘expect to assimilate new ideas without mental effort;
are reluctant to devote time to study and practice; and
lack the necessary persistence to tackle exercises of a non-trivial nature.’

Walkden and Scott (1980) ‘Aspects of mathematical education’

Factors that affect the ability of students to become independent learners

- Motivation
- Autonomy
- Collaboration

Motivation

Psychologists define two main types of motivation:

Intrinsic

Learners engage more deeply with their learning and have a desire to fully understand new ideas.

Extrinsic

Learners are goal driven and study strategically with minimum effort to achieve desired grades.

Self-efficacy and motivation

Self-efficacy is the belief in ones ability to be successful.

‘self-efficacy has emerged as a highly effective predictor of students’ motivation and learning’.

Zimmerman (2000) ‘Self-Efficacy: An Essential Motive to Learn’

This can be a problem when students have different educational backgrounds.

On university maths programmes where some but not all students had studied further maths, those students without further maths felt disadvantaged.

Hoyles et al (2000) ‘Changing patterns of transition from school to university mathematics’

Autonomy

Autonomous learners have control over what, when and how they learn.

Information and advice on options.

Online resources, lecture capture, blended learning, mathematical support centres.

Teaching that caters for a range of learning styles.

(In a 2011 meta-analysis, psychologists Ronald Fischer, and Diana Boer found that autonomy is a better predictor of happiness than money – The Guardian)

Collaboration

Independent learners make effective use of peer learning as well as support from academics.

The advantages of peer learning and support are well documented (Topping, Hill, Glynn).

Students learn how to learn from other students.

When lower year students work with higher year students their confidence and self-efficacy increase.

TransMaths Research Briefing (2011) 'Learning to learn in transition to university mathematics.'

Facilitated Learning

Experts guide rather than teach students:

- Problem based learning
- Enquiry based learning
- Project work
- Maths support centres

Facilitated learning enables students to take ownership of their learning and engage more deeply with the material.
Brockbank and McGill (1998) ‘Facilitating reflective learning in higher education’.

Postgraduate demonstrators can make excellent facilitators.

Case studies:

- Peer assisted study and peer mentoring
- Maths Learning Support Centres
- Computer Aided Assessment
- Mathematical Modelling and Problem Solving

What we can do

- Develop opportunities for peer support and learning
- Introduce more facilitated learning
- Extend access to resources
- Don’t overload the curriculum
- Increase intrinsic motivation
- Listen to students