Transitions: A Secondary Teacher's Perspective

Students' futures

The projected destination of students enrolled in Grade 9 in 2000

28% will go to university

23% will go to college

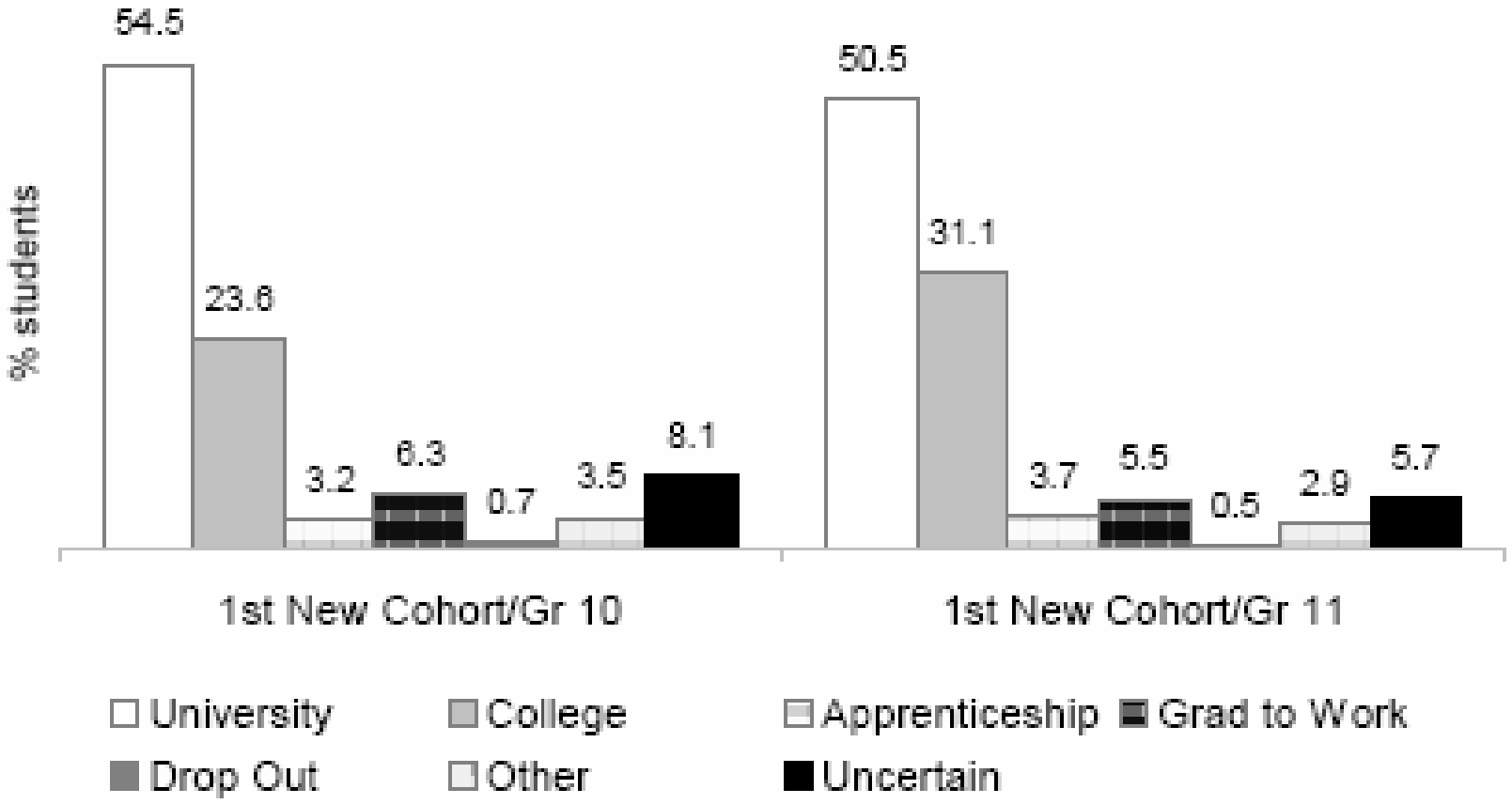
24% will graduate and go to work

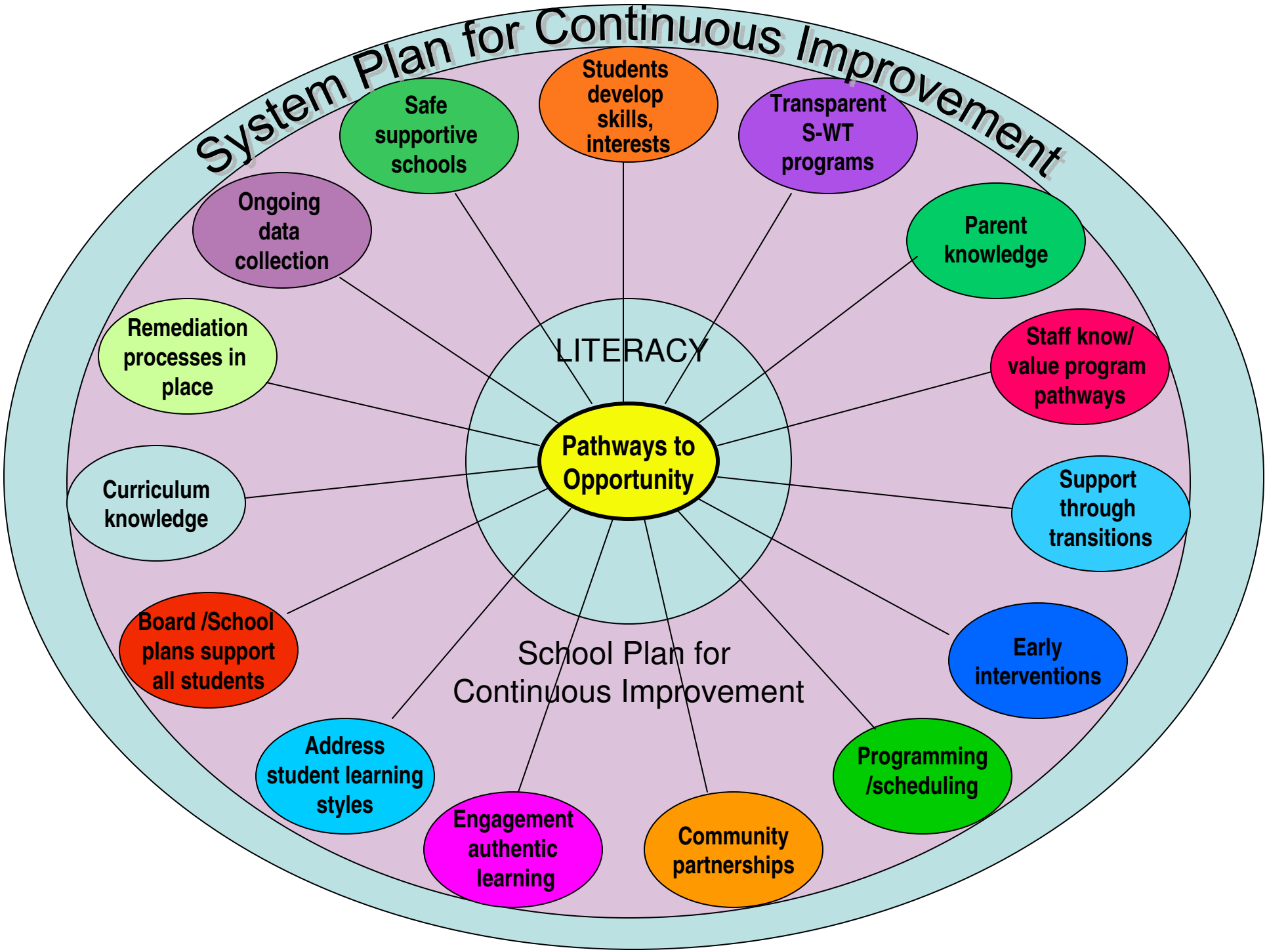
24% will leave before graduating

All of the students who are enrolled in GRADE 9

Source: Double Cohort Study 2002
Ontario Ministry of Education

Figure 6: Post-Secondary Plans of 1st New Cohort Students In Grades 10 and 11

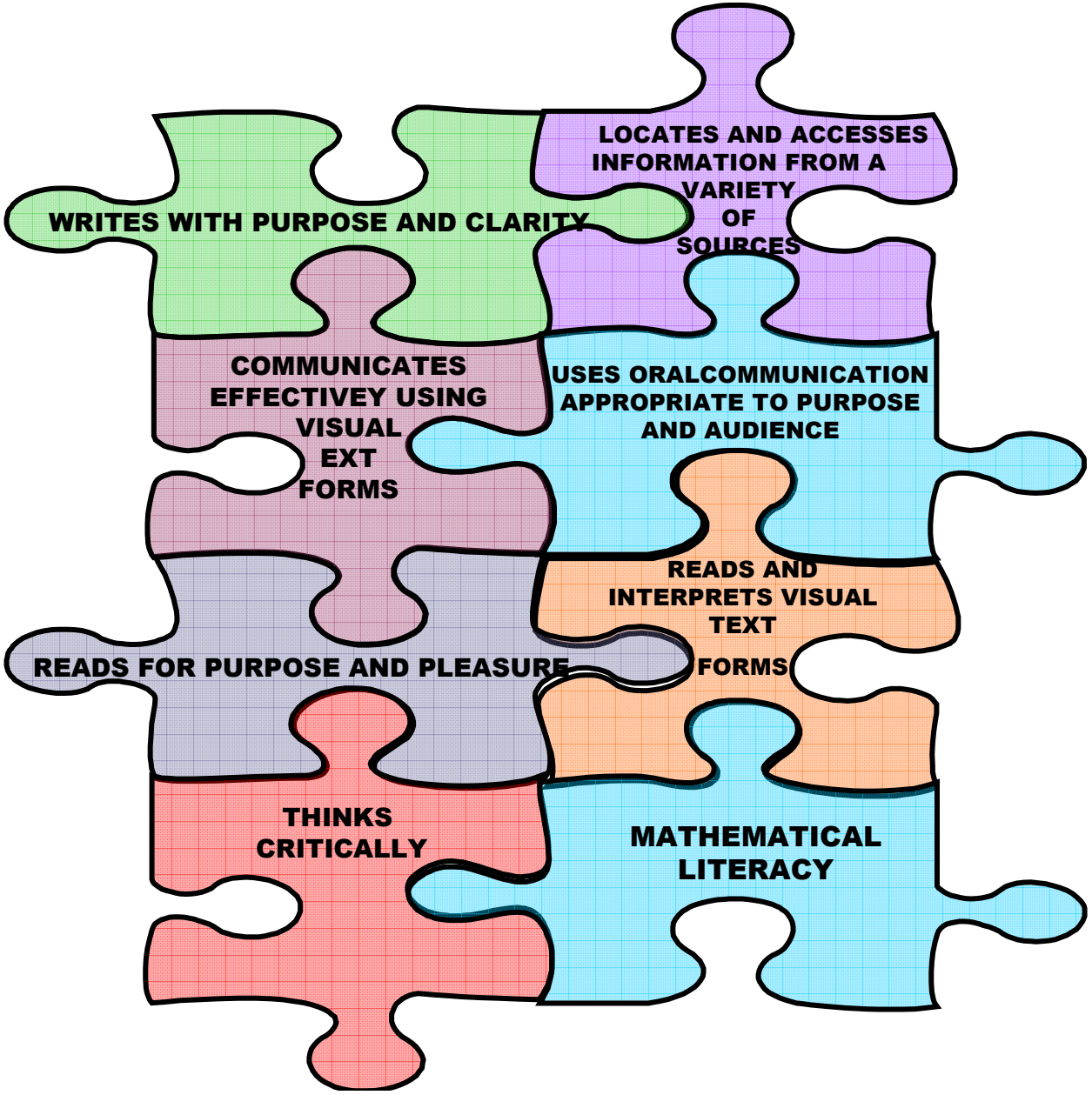



System Plan for Continuous Improvement
Students develop skills, interests
Safe supportive schools
Transparent S-WT programs
Ongoing data collection
Parent knowledge
Remediation processes in place
LITERACY
Staff know/ value program pathways
Pathways to Opportunity
Curriculum knowledge
Support through transitions
Board /School plans support all students
School Plan for Continuous Improvement
Early interventions
Address student learning styles
Programming /scheduling
Engagement authentic learning
Community partnerships

Support provided for the elementary/secondary transition

- Student Success – Mathematical Literacy, Literacy, Pathways, Community, Culture and Caring
- Learning to 18, School to Work Transitions
- School Plan for Continuous Improvement
- Instructional Intelligence
- Assessment for Learning
- Cooperative Learning
- Technology

The Literate Graduate



and Clarity

v

Communicates Effectively Using Visual Exit Forms

v

Reads for Purpose and Pleasure

v

Thinks Critically

v

Locates and Accesses Information From a Variety of Sources

v

Uses Oral Communication Appreciated to Purpose and

Beliefs and Understandings

All students can learn mathematics -- with enough support, resources and time -- and we must ensure they do.

What are math teachers' perceptions of their students' future path in math (at college or univ)?

- No common perception – data from Statistics Canada made available last year
- Much speculation and rumour about college and university reality
- Students always come back to say thanks
- Memories of our own experiences while taking our math degrees

What do math teachers actually teach, and why (i.e. how much it diverges from curriculum)

- Seven of the 29 schools in YRDSB have one or two enriched MCB4U courses (AP Calculus) a year
- Textbook (Harcourt, Nelson, McGraw Hill, Pearson) often guides the interpretation of the curriculum at any grade
- Exam sharing shows we're on same page

How do math teachers teach (for instance, do they focus on techniques, or on applications, etc.)

- Grade 11/12 university courses are often taught very procedurally (modelled, shared, guided, independent, practice, practice, practice!)
- Equal weight on techniques and applications broken into four categories of Achievement Chart (Knowledge/Understanding, Application, Thinking, Communication)
- Textbooks are primary resource

What are the frustrations?

- Misplaced students, idealistic parents putting unrealistic demands on students
- Students sometimes find it difficult to balance work/school/athletic/social obligations
- Students delaying coming in for extra help
- Technology not always available (labs, graphing calculators)

Do math teachers use technology and to what extent? Do they believe it's beneficial for their students' college/univ life?

- Varies greatly within and between schools.
- Perception: technology won’t be available for use in most colleges/universities
- Perception: lecture method is primary approach to teaching in universities

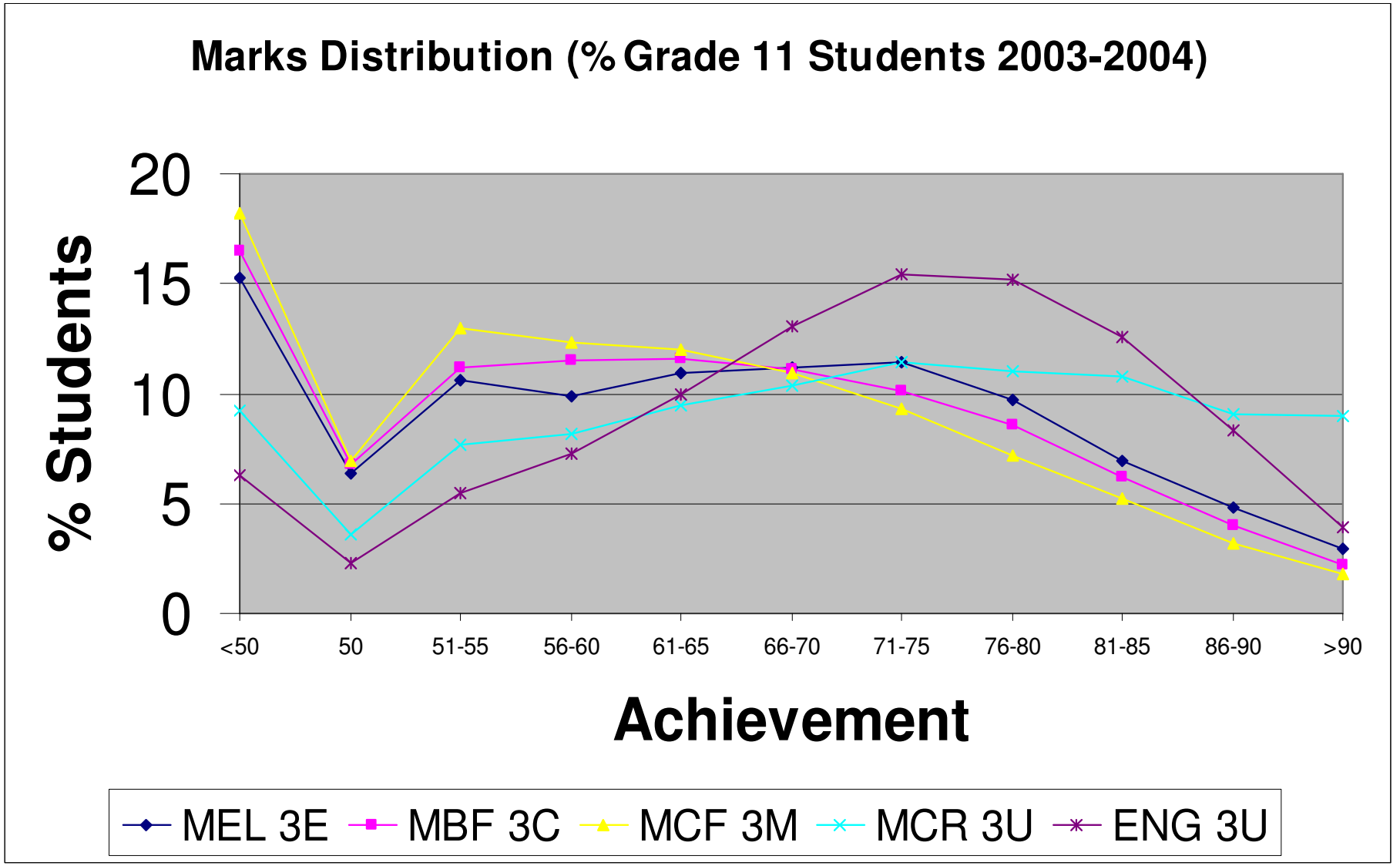
What course(s) do grade 12 students take, and in what numbers?

- Advanced Functions is the ‘golden apple’ and has significant drop out rates within the first few weeks depending upon teacher
- Some schools have only one section, others have as many as eight
- Data Management varies greatly from school to school (from one to as many as six sections)
- Geometry & Discrete and College Tech sometimes not enough sections to run other times (MGA from one to six, College Tech from none to two)

Double Cohort Study – Phase 4
Grade 11 Achievement

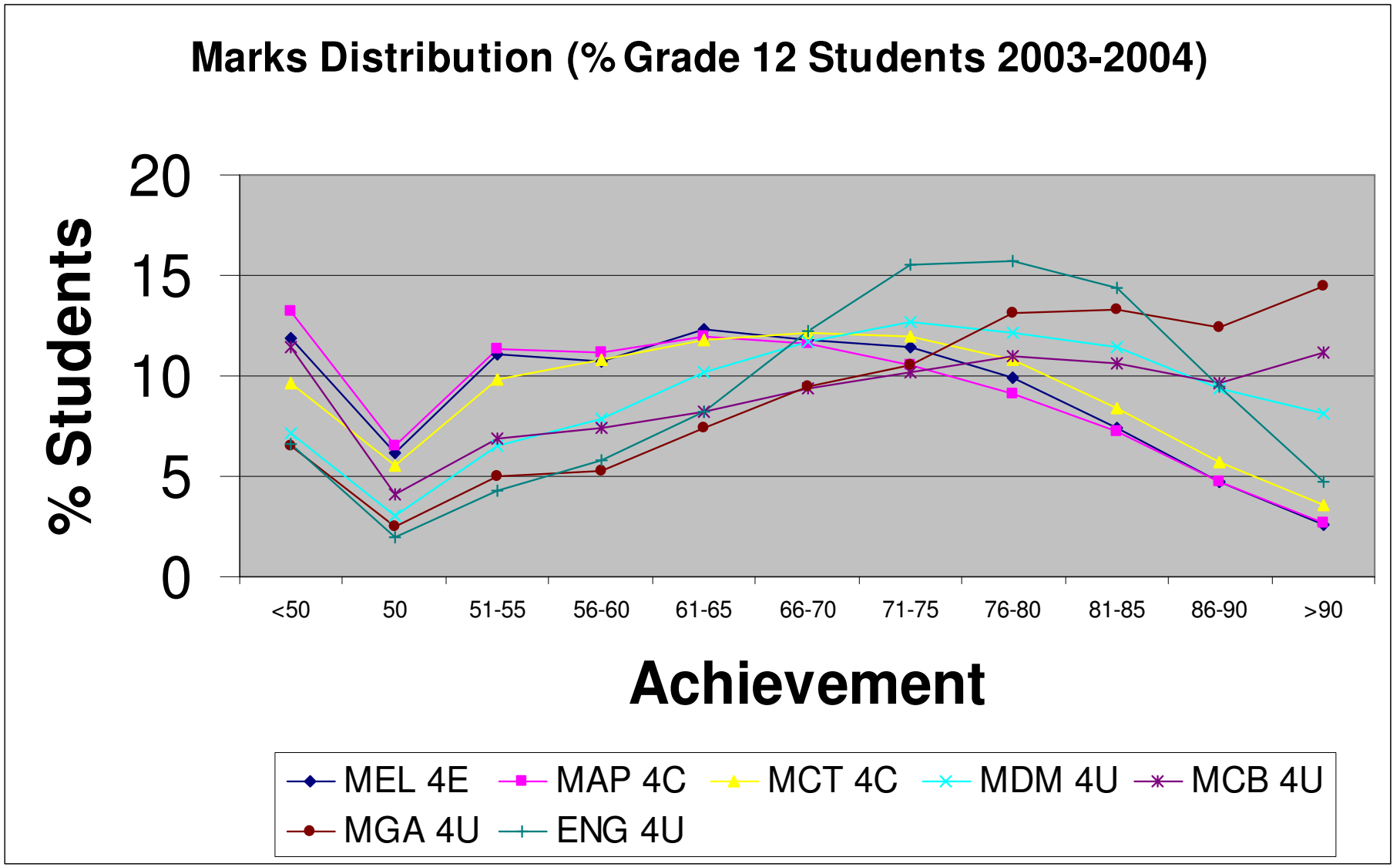
Grade 11 Courses	2001-2002	2002-2003	2003-2004
Functions and Relations (U)	11.4%	11.0%	9.2%
Functions (U/C)	20.9%	19.7%	18.2%
Personal Finance (C)	18.6%	17.3%	16.5%
Math For Everyday Life (W)	17.0%	15.8%	15.3%

Grade 11 Student Achievement



Double Cohort Study: Phase 4, 2005

Grade 12 Student Achievement



Double Cohort Study: Phase 4, 2005

What Factors Contribute Most To Students' Success in Mathematics?

- active participation in meaningful mathematics;
- in-depth understanding of mathematics is supported by active involvement in mathematical modelling, problem solving and reasoning through application
- ample time to perform investigations and to revise work;
- classroom practices that encourage discussion among students and between students and teachers;
- student reflection on their work;
- an appreciation of student diversity.

Ed Thoughts 2002 – Research and Best Practice.

What Factors Contribute Most To Students' Success in Mathematics?

- learning experiences that involve a range of activity from short whole-group instruction to longer times engaged in problem solving
- positive student-teacher relationships
- "user-friendly" classroom environments in which prior knowledge is identified and built upon, and where instruction is **developmentally appropriate**

Ed Thoughts 2002 – Research and Best Practice.

Equity: Developmentally Appropriate

A developmentally appropriate curriculum

- is challenging but attainable for most students of a given age group preparing for a given destination
- allows enough flexibility to respond to inevitable individual variation
- is consistent with the students' ways of thinking and learning

(Adapted from Clements, Sarama & DiBiase, 1997)

Double Cohort Study – Phase 4
Grade 11 Enrolment

Grade 11 Courses	2001-2002	2002-2003	2003-2004
Functions and Relations (U)	34.3%	28%	26.8%
Functions (U/C)	26.2%	27.4%	26.1%
Personal Finance (C)	29.6%	32.8%	34.4%
Math For Everyday Life (W)	10%	11.7%	12.7%

Double Cohort Study – Phase 4
Grade 11 Achievement

Grade 11 Courses	2001-2002	2002-2003	2003-2004
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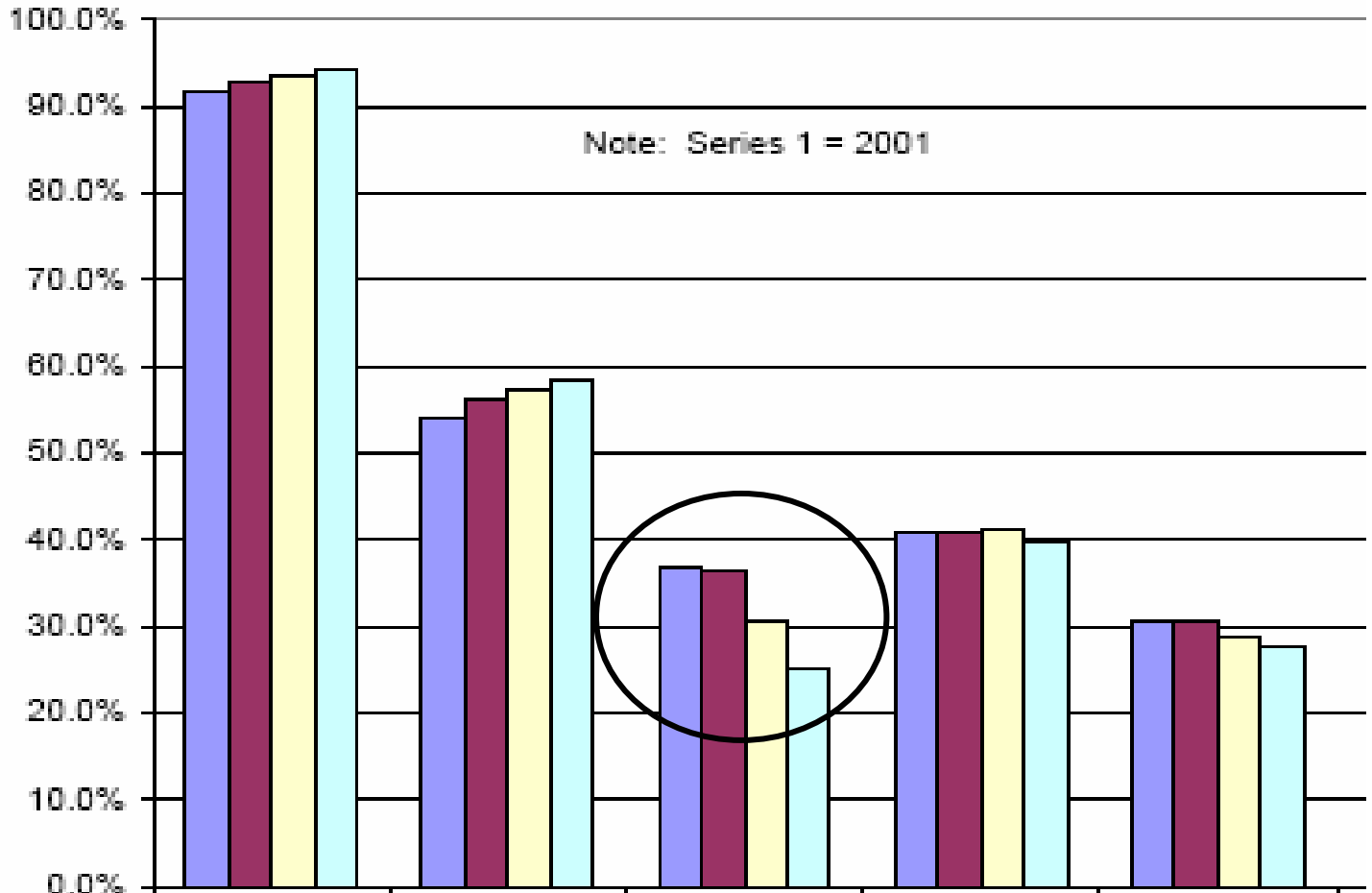
PISA 2003: Indices of Student Engagement In Mathematics (15 year olds)

	Significantly higher than Canadian average	Performing the same as the Canadian average	Significantly lower than Canadian average
Interest and enjoyment in mathematics		**ONTARIO** NFLD, PEI, NS, NB, QU, MAN, SK, AL	BC
Belief in usefulness of mathematics	NS, QU	NFLD, PEI, MAN, SK, AL	**ONTARIO** NB, BC
Mathematics confidence	QU, AL	NFLD, BC	**ONTARIO** PEI, NS, NB, MAN, SK
Perceived ability in mathematics	QU, AL	NFLD, PEI, NS, NB, SK	**ONTARIO** MAN, BC
Mathematics anxiety	**ONTARIO**	NB, QU, MAN, SK, AL, BC	NFLD, PEI, NS

Ontario Applicant Data 2001-2004



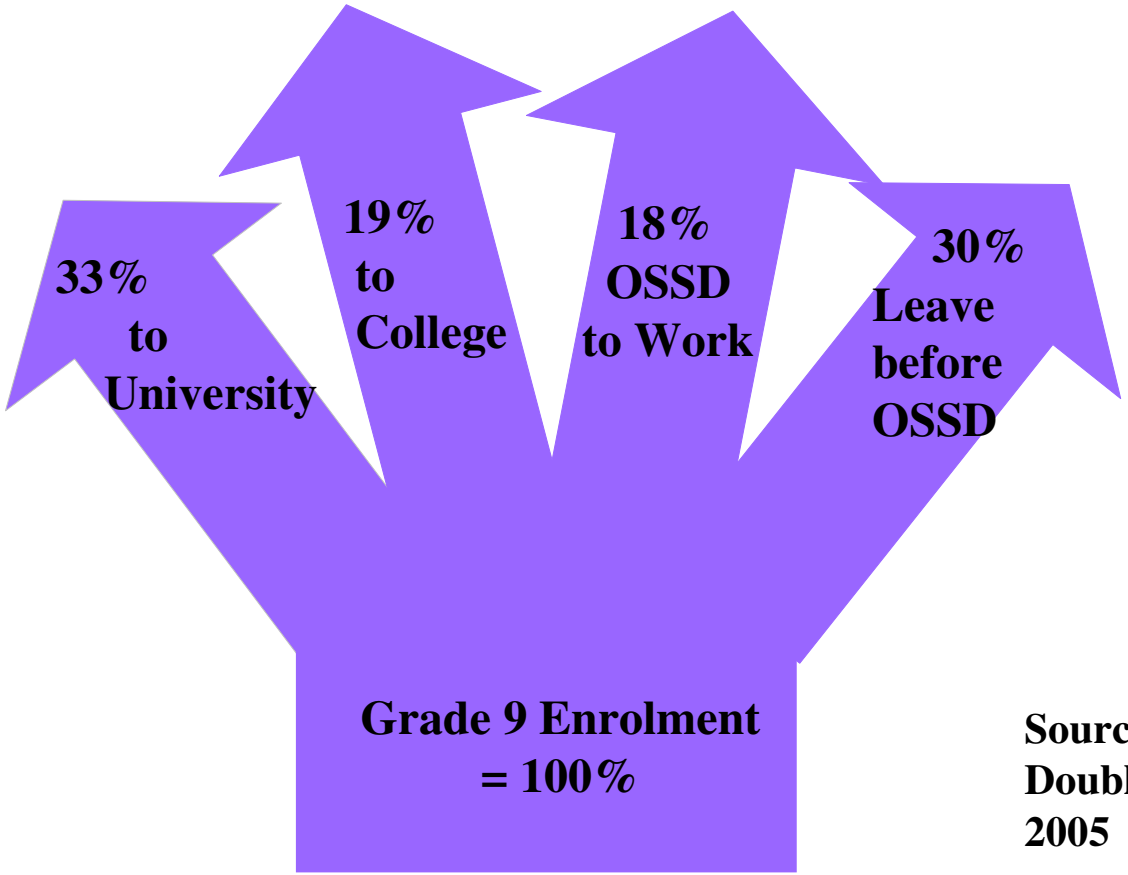
	English	Calculus	Algebra	Chemistry	Physics
Series1	91.9%	54.0%	36.8%	40.8%	30.7%
Series2	92.9%	56.1%	36.4%	40.8%	30.5%
Series3	93.4%	57.2%	30.5%	41.1%	28.6%
Series4	94.3%	58.3%	25.0%	39.9%	27.5%

Equity

Students can be considered to be "at-risk" when they are in peril of not reaching their learning potential.

CMESG Work Group

Student Destinations
1999-2000 Cohort to Fall 2004



Source: Alan King, Double Cohort Study 2005

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Source: Double Cohort Study 2002
Ontario Ministry of Education

Undergraduate Degrees
Statistics Canada

	1999	2003
Total, instructional programs	173575	201675
Education	**22290**	**24930**
Visual and performing arts, and communications technologies	5200	7035
Humanities	19590	22255
Social and behavioural sciences, and law	36700	38680
Business, management and public administration	31630	42470
Physical and life sciences, and technologies	14605	14750
Mathematics, computer and information sciences	7710	10515
Architecture, engineering and related technologies	12800	17330
Agriculture, natural resources and conservation	3825	3795
Health, parks, recreation and fitness	16920	18445
Personal, protective and transportation services	90	245
Other instructional program	2,210	1,230

How do Students' Attitudes Affect Their Performance and Future Opportunities?

Students' attitudes toward mathematics have a great effect on student achievement.

- Students who enjoy mathematics tend to perform well in their mathematics course work and are more likely to enrol in the more advanced mathematics courses.
- Students who dislike mathematics tend not to do well in these classes, and/or do not attempt the more advanced mathematics classes in secondary school.

How do Students' Attitudes Affect Their Performance and Future Opportunities?

Students develop positive attitudes when they

- make mathematical conjectures;
- make breakthroughs as they solve problems;
- see connections between important ideas.

How do Students' Attitudes Affect Their Performance and Future Opportunities?

Students with a productive attitude

- find sense in mathematics,
- perceive it as both useful and worthwhile,
- believe that steady effort in learning mathematics pays off
- view themselves as effective learners and doers of mathematics.

How do Students' Attitudes Affect Their Performance and Future Opportunities?

Students experience frustration when they are not making progress towards solving a problem. Therefore, it is important that instruction provide appropriately challenging problems so students can learn and establish the norm of perseverance for successful problem solving.