



3rd Edition

Technology and Student Success IN HIGHER EDUCATION

**A Research Study on Faculty Perceptions
of Technology and Student Success**

**McGraw-Hill Higher Education
2006 Summary Report**



The McGraw-Hill Companies

McGraw-Hill Higher Education

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November, 2006

Dear Colleague:

McGraw-Hill is pleased to introduce the 3rd edition of *Technology and Student Success in the U.S.* This publication is a summary of a research project conducted among U.S. university/college teachers. McGraw-Hill retained an independent market research firm and organized an advisory board of senior academic administrators and teachers to guide, plan and interpret the research findings.

The research was undertaken in 2006 after a hiatus of three years – we now have three years of U.S. data to use for comparisons.

This year's research was significant in a number of ways:

- It was decided to investigate, in more depth, attitudes towards learning and teaching objectives and to position their significance relative to instructional technology objectives.
- The research also attempted to be more forward looking by attempting to identify future challenges and opportunities through the eyes of academics.
- Survey participants were given several opportunities to voice their opinions and many took advantage of this – one question yielded 118 pages of individual comments. All comments were taken seriously and have been analyzed and presented.
- The tone of many of these “voluntary” comments was passionate and indicated a strong commitment on the part of survey respondents to their profession.
- Enthusiasm has never been higher – the response rate in both the U.S. and Canada doubled this year. And Canadian and U.S. findings were very strongly correlated, indicating the same concerns and issues on both sides of the 49th parallel.
- For the first time, the research indicates that academics are in agreement about their priorities – and are focused on technology issues.

Thank you for your interest in the study. We hope that it helps to promote understanding of the challenges facing educators in achieving their student success objectives.

Sincerely,

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I. BACKGROUND AND INTRODUCTION

McGraw-Hill initially undertook this research program on a limited basis in late 1998 and early 1999 to clarify the issues involved in “student success” – to identify and define what student success stands for as well as highlight the related issues from the point of view of university/college academics.

The scope of the research increased substantially and evolved dramatically over the course of time:

- **1999/2000** – some preliminary work focused on defining the issues related to “student success” and examining some specific technology teaching tools such as e-books, web sites and other emerging instructional technologies.
- **Wave 1 (2001)** – marked the full scale expansion of the research to include strong representative samples in both the U.S. and Canada. The survey focused to a large extent on “web-based” (as opposed to instructional) technology. Attempts were made to measure current practices (including usage and applications), the impact and effectiveness of web-based technology, and current needs and requirements such as training, resources, and support.
- **Wave 2 (2002/3)** – this was notable for the high level of importance assigned to instructional technology (the highest to date). The survey also explored the use of technology beyond the web. The research also attempted to measure the impact and effectiveness of technology on teaching and learning objectives. Finally, we measured faculty's frustration and satisfaction levels with implementing technology.
- **Wave 3 (2006)** – as mentioned in the introductory letter, this report (Wave 3) positions instructional technology relative to academic objectives, especially teaching and learning objectives in terms of relevance and importance.

The 2006 study:

- Demonstrates that technology continues to be primarily a course delivery tool – and illustrates how it fits with course preparation and development and professional development.
- Examines a wide range of instructional technology tools and how they fit with more traditional teaching methods.
- Continues to measure practices related to instructional technology and their impact on learning and teaching objectives.
- Examines in detail the relationship between “teaching” and “learning” objectives.

This is the 3rd and largest survey in the series – a 100% increase in participation among U.S. academics was observed relative to Wave 2 and an even larger improvement relative to the previous Wave 1. While it preserves, to a great degree, the structure of the first two surveys, it also zooms in on current issues.

II. METHODOLOGY

The following are the details of the methodological approach used to conduct the 2006 survey among U.S. academics.

- A total of 1880 academics were surveyed on the web – the questionnaire was mostly quantitative but there were opportunities for study participants to provide personal opinions on a range of issues.
- From the database of over 60,000 university/college teachers a sample was randomly selected (every n^{th} respondent) – to ensure the representativeness of the final sample.

The data collection process is described as follows:

- The sampling frame consisted of an opt-in list of university/college faculty from across the U.S. – the list was compiled by McGraw-Hill.
- All potential respondents were sent an email invitation to participate which was comprised of a link to a secure web site and an online questionnaire.
- Access to the web site and questionnaire were password protected – one reminder e-mail was sent to participants.
- McGraw Hill was identified as the sponsor of the U.S. research.

Geographic coverage – the survey was conducted across all 50 U.S. states.

Key sample descriptive – extensive demographic data are captured each year:

- **Gender** – male and female representation was fairly balanced: (43% males versus 57% for females).
- **Type of institution** – college versus university participation has been consistent from wave to wave: academics from four-year state universities comprise about half the sample (49%) compared to 25% for private four-year universities; two-year colleges comprise the rest at 25%.
- **Type of department/faculty** – representation from the four different departmental categories is still a bit uneven: hard sciences (engineering/math/pure sciences – 34%); BFE (business/finance/economics – 26%); arts (including English/philosophy - 17%); soft sciences (social sciences and health professions – 17%).

- **The research was coordinated and managed by RML Research in partnership with Matrix Research (who conducted the online/field portion).**
- **Both companies are members of the Marketing Research and Intelligence Association of Canada and are obligated to adhere to the standards and ethics of this organization.**

III. OVERVIEW

The 3rd Technology and Student Success study surveyed 1880 U.S. University/College faculty teachers. This report presents the major findings from the 2006 research.

- **Post-secondary teachers are focused, to a greater extent than ever, on the implementation and impact of instructional technology. They expect that technology will force them to adapt and change – and take on new roles. They specifically referred to abandoning their role as “lecturer” and acting more as a “facilitator” or “guide on the side”.**
 - The one aspect of technology that will impact their teaching role is expected to be distance or online learning, but they appear to be reluctant to abandon face-to-face instruction and are supplementing this approach with instructional technology to only a limited extent.
 - Technology is also driving professional development needs which are focused on planning for, integrating and implementing technology. To this end, academics also require more financial support and more release time. For the first time, access to technology resources, equipment and facilities for both students and teachers is a lower priority issue.
- **Survey respondents tend to be much more optimistic than pessimistic about the future. The more optimistic concur that the future will provide a better learning experience for the student. A few academics referred to: “more flexibility, more convenient, more control and more freedom”:**
 - Academics also anticipate improved course delivery with the increased use of online and distance teaching which should provide: “More up-to-date and current information...More real-world applications”. There is additionally some cautious optimism – recognition that teachers will face more challenges such as more work and more time devoted to adapting to new technologies. But they also anticipate an improved teaching experience” “Easier to organize, to teach, more flexibility”.
- **The more pessimistic teachers are in the minority and clearly prefer traditional face-to-face teaching and additionally do not want to lose human interaction. They are fearful of an inferior teaching experience (“too demanding, too time consuming, superficial, dumbed down). They additionally anticipate a poor learning experience as a result of factors such as lower standards and class sizes that are too large.**
 - Some also express little confidence in students which they describe as being “poorly motivated” and teachers which were referred to as being “too old, with poor technical skills”.
- **Only a minority of post secondary faculty are negative towards instructional technology. For the most part, the prevalent attitude can best be described as one of ambivalence which is evident in the low level of satisfaction with implementing and integrating technology.**
 - Resistance to technology is based on: a lack of faith (“Not effective, not suitable”); a preference for face-to-face interaction; and avoiding having to deal with new technologies (“Never tried”).
- **Course preparation and development is still the top priority. Post secondary teachers are very satisfied with their academic achievements and objectives compared to their technology achievements.**
 - The main “academic” issue is the lack of success in utilizing technology to achieve their key “learning” and “teaching” objectives. The one technology widely endorsed by university/college faculty is email – used to enhance teacher-student communication.

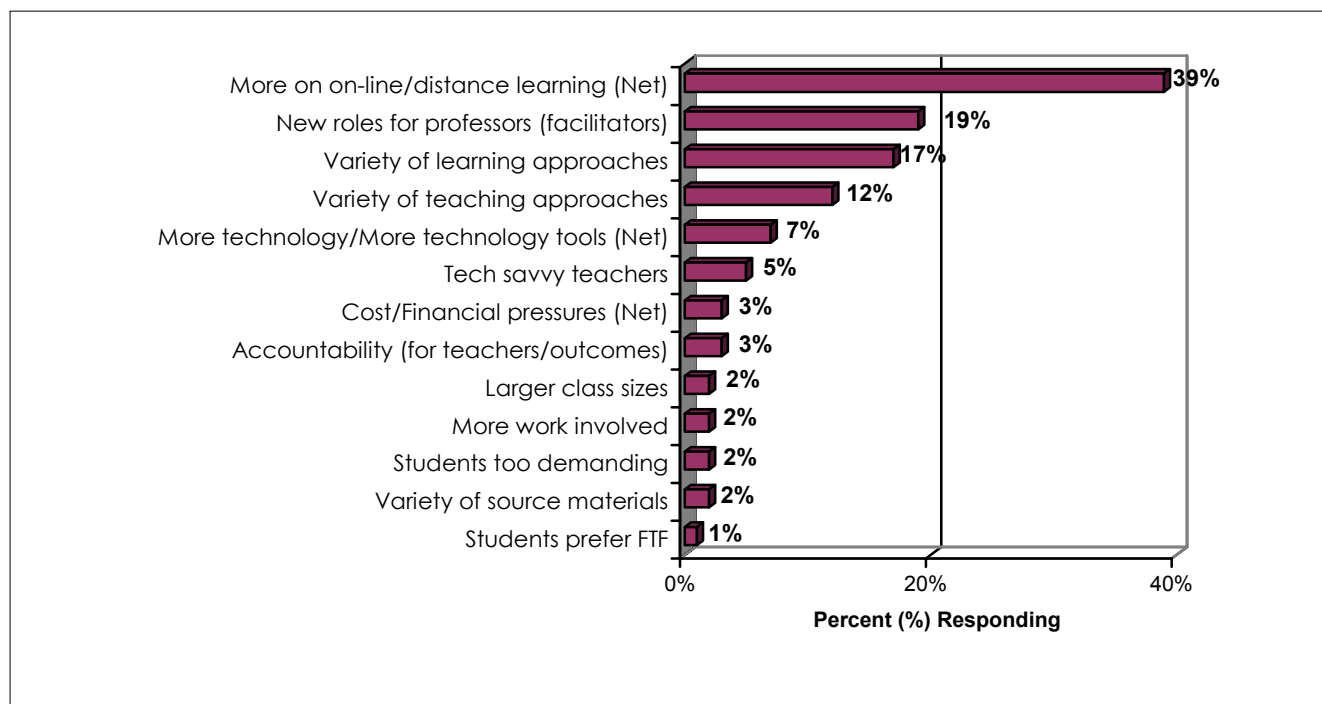
IV. SUMMARY OF FINDINGS

IV.i Changing Roles – Looking Ahead

i. CHANGING ROLES – LOOKING AHEAD

- It is clear that post secondary teachers expect things to change and anticipate that the most significant driver of change will be instructional technology – specifically online and distance learning.
 - Teachers also tend to be optimistic about these changes – and the future of post secondary education in general.
-
- **University/college teachers articulated a number of different ways in which they expect their role to change in future** – comments elicited from the respondents were categorized and are summarized below:
 - **Online and distance learning are clearly expected to have a major impact** – this was the single biggest technological issue referred to in this wave. Even though there is little evidence that academics are switching to online/distance learning in large numbers, it is still a high profile issue – mentioned by more than one third (39%).
 - **Another challenge identified by the research is the anticipated change in the “role” of the post secondary academic** – it is commonly believed that teachers' roles will change from that of “lecturer” to one of facilitator to “guide on the side”.

Chart 1 – Ways In Which Roles Will Change



- **Post secondary teachers additionally expect to adopt a variety of both learning and teaching approaches** – these issues combined represent a substantial challenge for academics (17% and 12%, respectively).
- It is obvious that technology is a recurring theme – there were minor references to the impact of other technologies besides distance/online learning (more technology and tech-savvy teachers).
- **Reproduced below are some of the specific comments provided by academics in addressing perceptions of how post secondary view their changing roles:**

MORE USE OF ONLINE /DISTANCE LEARNING

- *“We will expect faculty members to offer on-site courses that have web support...They will be expected and need to use more current information technologies...With so much extra work being piled on it, I'm sure we will have to rely on more efficient ways to educate (e.g., Blackboard)...They will need to understand how the brains of the new generation work. We have laptops in the classroom in many programs and many "old timers" have trouble with the students who multi-task while in class, using their laptops during lectures...These students are coming to us with shorter attention spans yet an uncanny ability to multi-task”.*

NEW ROLES FOR PROFESSORS – FACILITATORS/GUIDES/MENTORS

- *“More a facilitator than a 'teacher' with the purpose of helping students learn to learn - in some environments the role has changed to being less evaluative and more sympathetic with less onerous teaching on pure content...I think they will be more 'guiders' of students through the incredible range of information sources, helping students learn to judge the quality of information...Technology will slowly erode the role of instructor as primary mode of instructional delivery...They (teachers) are the senior partner in the learning relationship...Most of the newly hired professors will be teaching on-line content, and being paid a fraction of what professors through out recent history were paid”.*

VARIETY OF LEARNING APPROACHES/ENVIRONMENTS

- *“I believe as we continue to get an influx of under-prepared students it will become more challenging. We have such a diverse environment of students with a wide variety of backgrounds...Moving away from the teacher-centered classroom toward a student-centered learning experience...They also need to help the students develop a method of prioritization, problem-solving and encourage them to 'dig'...The traditional classroom will be replaced by on-line communication that will be both self paced and scheduled to meet the time limitations of students and professor...Though I have not done this to date, the option for individualization is amazing with the increasing tech support we are all being provided...Faculty are not fully appreciating that the use of online materials should lead to developing different materials for each student relative to their background, ability and interests...The wide range of student needs and learning styles will also become more of a factor, with the need to provide 'something for every learner' in classes”. The results are giving students frequent opportunities of critiquing themselves and of allowing for and encouraging more personal responsibility in terms of analysis, self correction and pacing”.*

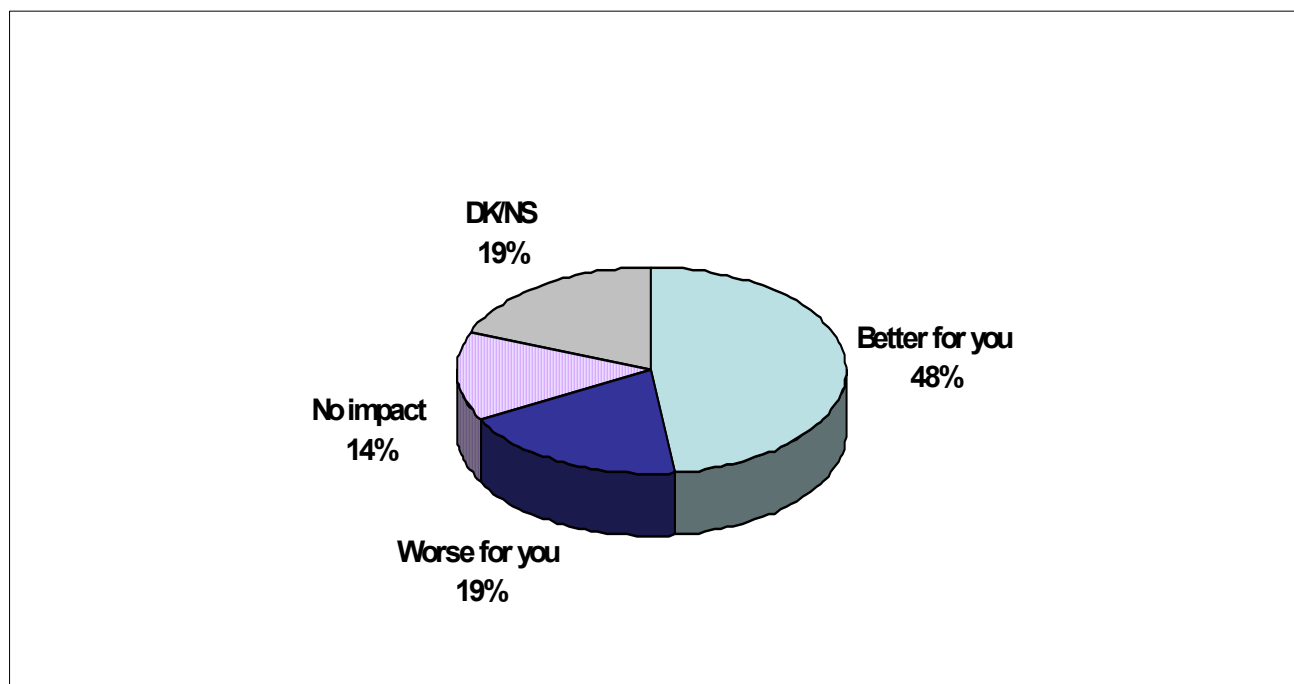
VARIETY OF TEACHING APPROACHES

- *“Professors will be required to change methods to include heavy use of the internet. Moreover, they will have to come up with methods to address the decreasing attention spans of future generations of students...Professors will be required to incorporate a variety of teaching and learning skills to stimulate and motivate...I see the professor having to select appropriate communication tools and methods from a menu of alternatives in order to accommodate different learning style...I also see faculty providing students with more downloadable material, and asking students to learn various concepts on their own...Professors will become more accepting of the need to provide multiple ways of mastering course material... I do see the mode of delivering instruction changing considerably -- not necessarily for the better...More time will be spent tutoring and providing remediation; more time will be devoted to designing and monitoring self-study/independent learning packages and to tailoring course whys, what’s, and how’s to increasingly diverse student needs... I predict that there will be more flexibility in how course content is delivered (blended learning, etc.). Unfortunately, I also see teaching responsibilities being ‘downloaded’ to tutors”.*

- **How post secondary academics feel about their changing roles** – after defining how their roles will change over time, post secondary teachers were asked to indicate their feelings in this regard.

As a group, they are shown to be much more positive than negative (48% versus 19%). Good proportions are neutral (Don’t Know/No Impact – 33%) but a review of their comments showed these respondents to be positive and confident about their technological abilities, their teaching skills and their ability to adapt to the future:

Chart 2 – Impact of Anticipated Role Changes



- **Why role changes are expected to be “better”** – the 48% of post secondary teachers who are positive about the future are shown to be optimistic about a number of things:
 - Positively inclined teachers are conscious of their students' needs and requirements and feel they will have a better learning environment (33%) – offering flexibility, more freedom, more control and ultimately result in more motivated and involved students.
 - Academics additionally feel they will be able to provide more course delivery “options” (22%) such as more up-to-date information, more real-world and more hands-on learning.
 - There is still some ambivalence about the future – while there will be more challenges for teachers (such as more work and dealing with more technology – 15%) they are also convinced that the teaching experience can be enhanced (such as more tools for class management and administration and course delivery).

Table 1 - WHY ROLE CHANGES WILL BE BETTER - (48% Of Total Sample)		
NET – Better Learning Experience	33%	<i>“More flexibility for students; more convenient; more control; more freedom...Students like technology, comfortable with...Better learning experience; more/better learning; effective learning...Addresses individual student needs; personalized, student-centered...More involving for students; more motivating, more engaging/stimulating...Better student-teacher communication...Develop more critical thinking”.</i>
NET – Better Course Delivery	22%	<i>“More online courses, more hybrid...More up-to-date/current information...More real-world applications/experiences, more hands-on...More/better resources available, more tools and options...Courses more available and accessible, more students can participate.”</i>
NET – New Teaching Challenges	15%	<i>“Challenges for teachers; requires more time and work...Need for equipment, technology, support...Like technology, keeping up with technology”.</i>
NET – New/Better Teaching Experience	8%	<i>“Makes it easier to teach, to organize, more flexible for teachers...Better class management/ administration...New roles for teachers (mentoring, facilitating, moderating”.</i>
NET – Better Student	8%	<i>“Students more responsible; more empowered, more independent and self-disciplined...Better prepared students, for future jobs”.</i>

- **Why anticipated role changes are expected to be “worse”**— this small minority (19%) of respondents appear to have strong opinions:
 - There is some resistance to online teaching (24%).
 - Others are pessimistic about poor quality teaching experiences (25%) and poorly prepared teachers (16%) – the anticipation that there may be too many demands placed on teachers resulting in poor quality teaching; they also fear poorly skilled and poorly motivated teachers.
 - There is also pessimism about possible deterioration in student learning (7%): due to factors such as large class sizes; additional concerns are poorly motivated and poorly prepared students (7%).

Table 2 - WHY ROLE CHANGES WILL BE WORSE - (19% Of Total Sample)

NET – Just prefer face-to-face	24%	<i>“Prefer/Need in class...Online too personal; lose touch, sterile, distant from student, poor substitute for face-to-face”.</i>
NET – Poor Teaching Experience	25%	<i>“Too demanding, too time consuming, increasing demands...Superficial teaching, dumbed down, not reflective, less critical thinking...Emphasis on economic versus educational goals., emphasis on job skills, degree versus education...Hard to assess students”.</i>
NET – Poorly Prepared Teachers	16%	<i>“Lack of technology, support resources...Too old, almost retires, old fashioned...Our role devalued/undermined, lost jobs, diminished role...Poor technical skills, not adept, hard to keep up with changes...Poorly committed faculty, less involved, poor teaching experience, disconnected from jobs”.</i>
NET – Poor Learning Experience	7%	<i>“Poor learning, poor educational experience, poor quality education, lower standards, poor quality content, poor technology...Class sizes too large, increasing class sizes, fewer smaller class sizes, more students...Lack of personal attention”.</i>
NET – Poorly Prepared Students	7%	<i>“Poorly motivated, less committed, less involved, less interested...Poorly prepared for post secondary, poor skills, poor quality student...Students too demanding, require too much time and attention...Not independent, too coddled, not hardworking, immature, spoon fed...Low expectations of students, poor attention”.</i>

IV.ii Teacher Priorities and Challenges

ii. TEACHER PRIORITIES AND CHALLENGES

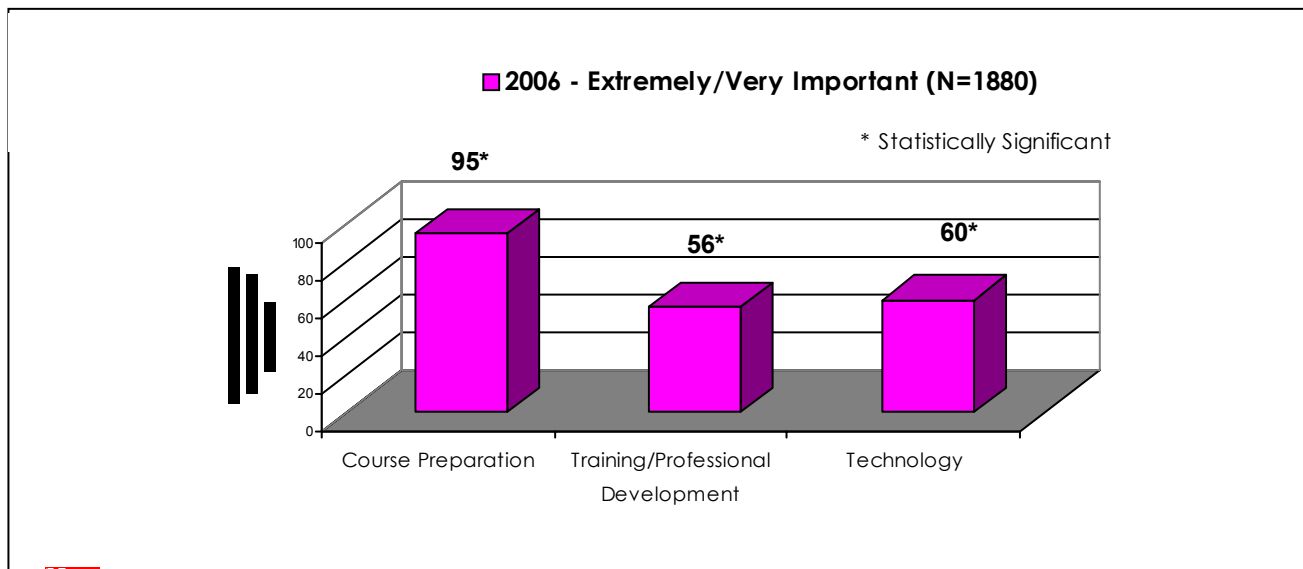
- University/College teachers focus on Course Preparation as a top priority followed by Professional Development and Technology – the latter are currently equal in importance and are found to be: secondary but closely related issues; significant course delivery issues; major challenges for post-secondary teachers.
- Post secondary teachers indicate a wide range of support requirements to achieve their objectives:
 - Academic support is a high priority – but PD and Technical support are also important.
 - Teachers want more technical support mainly to implement technology solutions – but they also require more learning time and more recognition for upgrading their skills.
 - They also want more emphasis on “solutions” – identifying what applications are available, what is effective and what is easy-to-use.

- In this section the objective is to identify:
 - The overall priorities of post secondary teachers.
 - Those areas where more support is required – in both academic and technology areas.
 - The challenges that academics face in all areas.

Teacher Priorities

- Course Preparation continues to be a top priority (95%) – and this is primarily related to academic, teaching and learning issues.
- In 2006, Professional Development is almost on a par with Technology (56% versus 60%) – measured in terms of importance.

Chart 3 – Overall Priorities



Teacher Support Requirements

- **High Priority Support Areas** – respondents were asked to indicate, from a list of thirteen items, those areas where they require more support from their school:
- For Course Preparation, teachers need help in a variety of areas including dealing with different learning styles and adopting a variety of course preparation approaches.
- Professional Development is another high priority support area – teachers require more time and more recognition for upgrading specialized skills.
- Technology support is somewhat less important than academic & PD support.

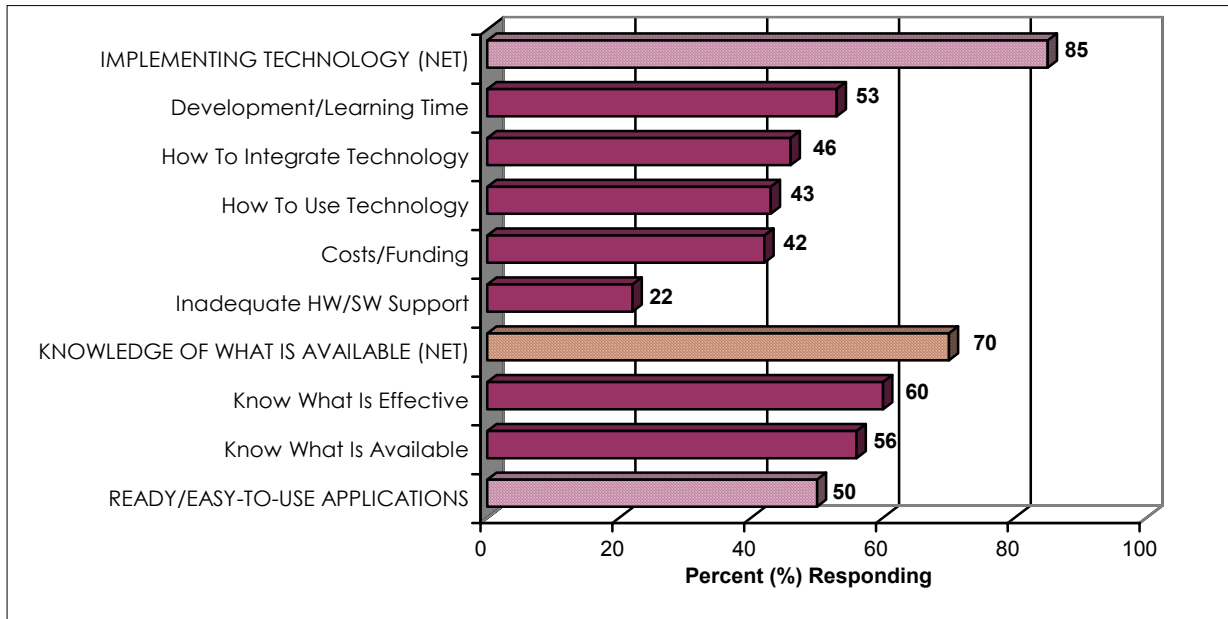
TABLE 3 - HIGH PRIORITY FACULTY ISSUES		
COURSE PREPARATION – 95% EXTREMELY/VERY IMPORTANT	PROFESSIONAL DEVELOPMENT – 56% EXTREMELY/VERY IMPORTANT	INSTRUCTIONAL TECHNOLOGY – 60% EXTREMELY/VERY IMPORTANT
HIGH PRIORITY SUPPORT AREAS		
<ul style="list-style-type: none"> • ACADEMIC SUPPORT – 60% (Dealing With Different Learning Styles/ Learning & Teaching Issues/Course Preparation Approaches/ Expert Knowledge) 	<ul style="list-style-type: none"> • PD SUPPORT – 64% (Recognize Specialized PD/ Release Time) 	<ul style="list-style-type: none"> • TECHNOLOGY SUPPORT – 58% (On Campus Tech Support/ Expertise to Implement)
<ul style="list-style-type: none"> • FINANCIAL SUPPORT (54%) 		

- **Lower Priority Support Areas** – this includes administrative support and access to better equipment and facilities – the latter correlates with what was found to be less emphasis on the need for more student and teacher access to technology resources.

Technology Challenges

- **Post secondary teachers identified three areas where they are the most technologically challenged:**
 - “Implementing technology” is an important challenge (85%) – and involves learning time and technology integration.
 - Related challenges involve identifying the right “solutions” -- knowing what applications are available (70%) and having access to easy and ready-to-use applications (50%).

Chart 4 – Technology Challenges

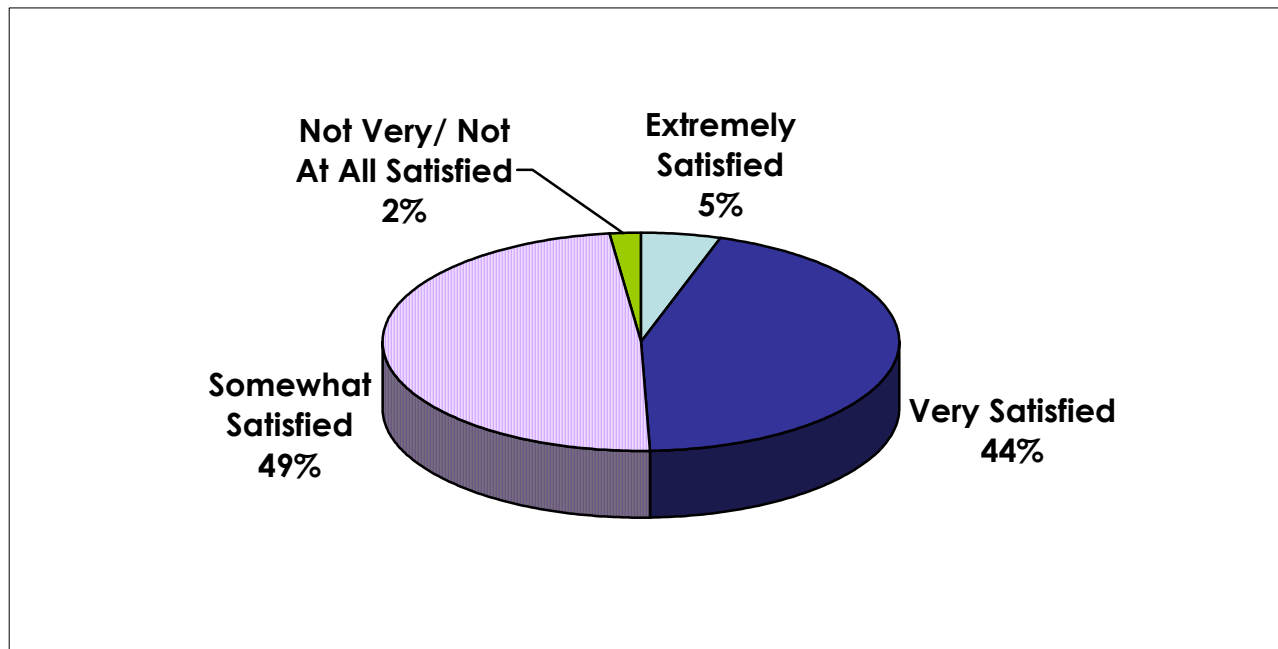


IV.iii Teaching And Learning Issues

iii. TEACHING AND LEARNING OBJECTIVES

- **University/college teachers are shown to be highly satisfied with achieving their teaching objectives.**
- **Teaching and learning objectives are distinct but there is some correlation:**
 - **Teachers are focused on teacher-student communication and curriculum content.**
 - **On the “learning” side – they additionally want to develop higher order “thinking” skills.**
 - **On the “teaching” side – there is a strong desire to be responsive to their students.**
- **SATISFACTION WITH ACHIEVING TEACHING OBJECTIVES** – all respondents were asked to indicate their level of satisfaction with their teaching objectives:
 - Almost half (49%) are highly satisfied – Extremely/Very.
 - This yields a “total” satisfaction rate of 98%.

Chart 8 – Satisfaction With Teaching Objectives



- **Teaching and learning objectives – the research separates “teaching” and “learning” issues, recognizing these as distinct in an attempt to gain a better understanding of these issues:**
- The summary table below compares the top five “learning” and “teaching” objectives:
 - Teacher-student communication is clearly viewed as important for both sets of objectives. This coincides with the predominance of e-mail as the most popular instructional technology tool and which is recognized as one of the best ways to enhance communication,
 - “Understanding subject matter” probably coincides with “ensuring the curriculum is covered” and both are related to content – the former is more from the students’ point of view and the latter is more of an objective for the teachers.
“That students are able to understand course content and not just memorize it and apply it in a mechanical manner....I primarily desire a good understanding of the discipline (conservation biology) and the capacity to think critically with the material... Of course, it is important that the learner is able to develop an understanding of the key concepts, mastery of course content... Demonstrate knowledge and mastery of INTASC knowledge, skills, and dispositions”.
 - **Additional priorities on the “learning” side include an interest in encouraging critical thinking, problem solving and independent learning – demonstrating that teachers are committed to going far beyond the basics:** *“That students develop an comprehensive and critical knowledge of subject matter...To make them genuinely interested in the topics...Thorough grasp of how to critique what is in front of them...Learn more than a superficial overview that most students have...Recognition of the validity of several approaches to the same problem”.*
 - **On the “teaching” side, teachers are concerned about being responsive to the needs of their students:** *“Instill a passion for my profession...Make the classroom an alive, exciting and energetic atmosphere...Provide regular feedback...Provide in-depth learning...Supportive learning environment...Accommodate different personalities and different learning styles”.*

Table 4 – TOP LEARNING AND TEACHING OBJECTIVES	
TOP FIVE “LEARNING” OBJECTIVES	TOP FIVE “TEACHING” OBJECTIVES
Understanding of Subject Matter (90%) – “Demonstrate understanding and can explain new concepts...To develop the capacity to express in English their ideas concerning the material”.	Ensure Curriculum Is Covered (79%) – “Provide a strong course content...Stay current with the developments in science and include these in the teaching...Provide a strong course content with maximum interest”.
Teacher-Student Communication (74%) – “Teacher-student relationships of trust and understanding...Establish good rapport to ensure trust and accountability...Each class should be a dialogue between teachers and students”.	Good Communication With Students (84%) – “There should be a sense of exploring the material together...Students should be free to bring new insights to the teacher...Find new and unique ways of communicating with students...Give them honest feedback”.
Critical Thinking (90%) – “Students should be able to take the material that they are learning and apply it to relevant, real-life experiences...Thinking outside the boundaries of narrowly-defined discipline...Make own decisions based on thorough analysis of the facts”.	Accommodating Variety of Learning Styles (72%) – Provide a variety of technological media to accommodate the diversity of learning styles...Be able to identify students with learning disabilities and ESL problems...Create optimal conditions for student learning”
Problem Solving Skills (88%) – “Being able to formulate the approach to solving a problem...Ability to organize and structure a problem...Know what the answer should look like before solving the problem”.	Provide Stimulating Learning Environment (87%) – “Instill a passion for my profession...I want them to love it too...Provide a fun approach to a dry subject matter...Motivate to think in and outside the classroom”.
Independent Learning (72%) – “The primary objective (in my course) is for students to learn and accept responsible behaviour...Assist students to become independent learners...Feel they are competent to evaluate what to learn...Make students become self-motivated learners”	Provide Good Student Support (73%) – “Foster in-depth learning...Support personal growth of students...To reach out to those who are struggling...Support them where I can”.

- **Lower priority teaching and learning issues** – it is important to identify what academics view as issues that are subordinate to those previously discussed.
 - **Lower priority “learning” issues** – academics seemed to place less emphasis on encouraging:
 - Interaction between their students (peer-to-peer communication and collaboration between students).
 - Experiential and hands-on learning.
 - **On the “teaching” side, post secondary teachers appeared to de-emphasize course delivery issues such as:** consistent delivery; flexible access (to coursework); efficient course delivery; providing a number of different course delivery options.

IV. iv Teaching Practices And Tools

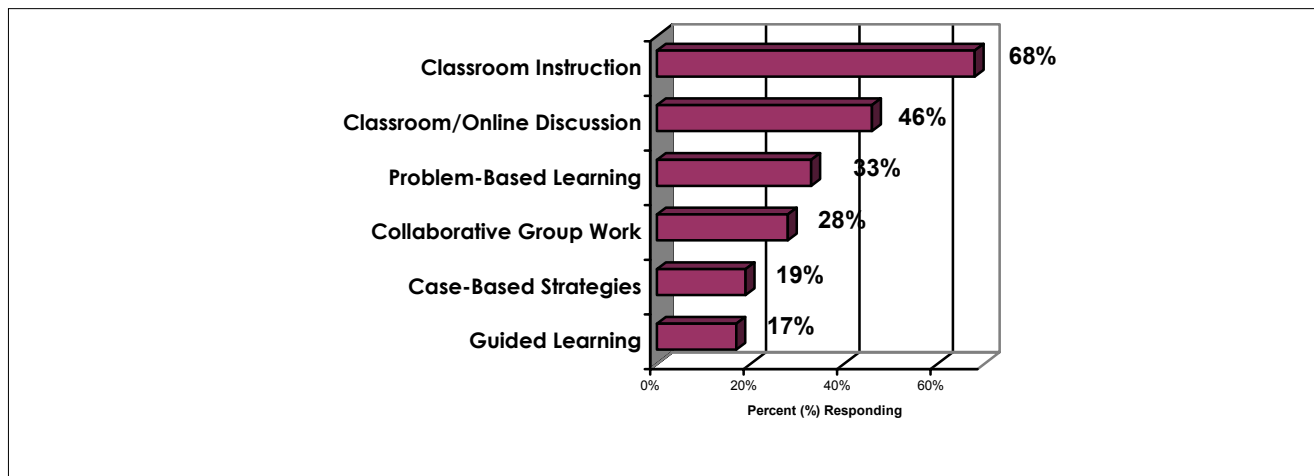
iv. TEACHING PRACTICES AND TOOLS

- Post secondary teachers utilize a wide variety of instructional tools and approaches and tend to combine high and low tech methods:
 - Post secondary teachers indicate a strong preference for direct and indirect personal interaction with students – such as classroom or online discussions.
 - Their preferred instructional tools include hard copy texts, e-mail communication, and text publisher resources.

They are reluctant to relinquish face-to-face teaching – but prefer to supplement face-to-face teaching with technology tools and approaches. Hence, the increasing popularity of “hybrid” teaching as opposed to relying too heavily on electronic course delivery.

- This section covers three aspects of course delivery – in order to understand how post secondary teachers expect to achieve their teaching objectives:
 - **Instructional tools** – comprised of a mixture of low-tech and high-tech tools.
 - **Instructional approaches** – covering specific methods that post secondary teachers use to achieve their objectives.
 - **Teaching practices** – tracking how academics are adapting to instructional technology and to what extent they are combining technology with traditional course delivery approaches.
- **Instructional approaches** – post secondary teachers utilize up to six or seven different approaches, on average, such as classroom instruction, guided learning and Socratic dialogue.
- In terms of preferred approaches, teachers zero in on either direct or indirect interaction with students – either in the classroom or online (in some sort of a chat facility or medium).

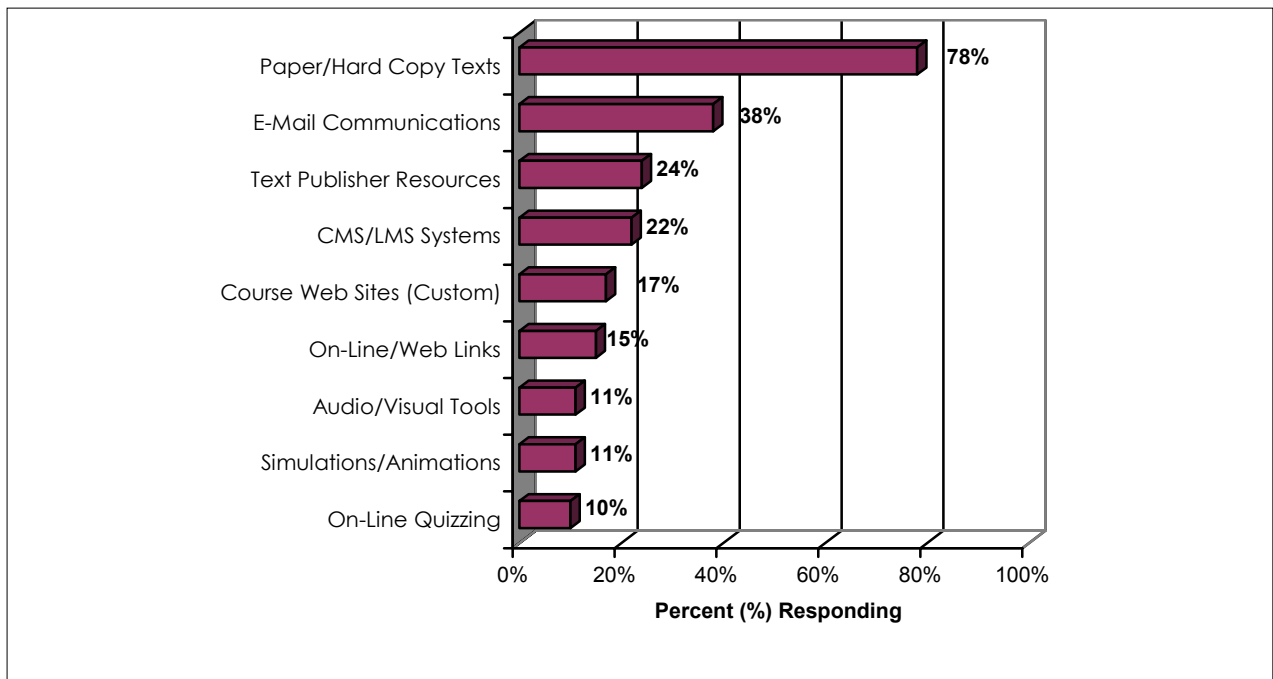
Chart 6 – Preferred Instructional Approaches



Instructional tools – as with instructional approaches, post secondary teachers utilize a wide variety of teaching tools (about six or seven, on average) and rely on both high and low tech options:

- The large majority (78%) rely mostly on hard copy textbooks – this has not changed in three waves of research.
- Reliance on text publisher resources is also high (24%) – one quarter supplement their texts with these resources which are assumed to be available in either hard copy, online or electronic formats.
- The most important instructional technology tool is shown to be e-mail communication (38%) – which is likely used to enhance teacher-student communication.

Chart #7 – Preferred Instructional Tools



- **Teaching practices** – the summary table below details current teaching and instructional practices, many of which we have been tracking over the entire life of this research project. The research attempts to measure the face-to-face teaching component compared to three types of electronic course delivery options.
- The incidence of using each option shows that face-to-face teaching is still the most popular by far – utilized by nine in ten respondents and accounting for almost four-fifths of total teaching time (77%).
 - The use of online and distance learning techniques is fluctuating with hybrid courses increasing significantly and perhaps being adopted at the same rate as “pure” online and/or distance teaching (10% versus 11%, respectively).

Table 5 – Instructional and Teaching Options

	2003	2006
• % Teaching Face-To-Face	94%	90%
• % Teaching Local Online	18%	17%
• % Teaching Distance	15%	19%
• % Teaching Hybrid	24%	25%
Average % of Total Teaching Time By Course Type		
• Face-To-Face	N/A	77%
• Online/Distance	N/A	11%
• Hybrid	N/A	10%

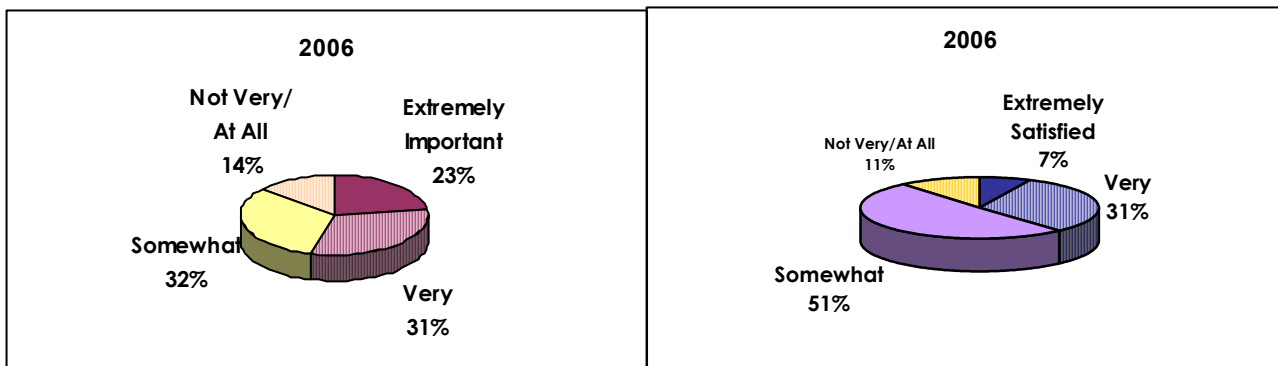
Hybrid courses = combination of face-to-face and online/distance courses.

IV.v Attitudes Towards Instructional Technology

v. ATTITUDES TOWARDS INSTRUCTIONAL TECHNOLOGY

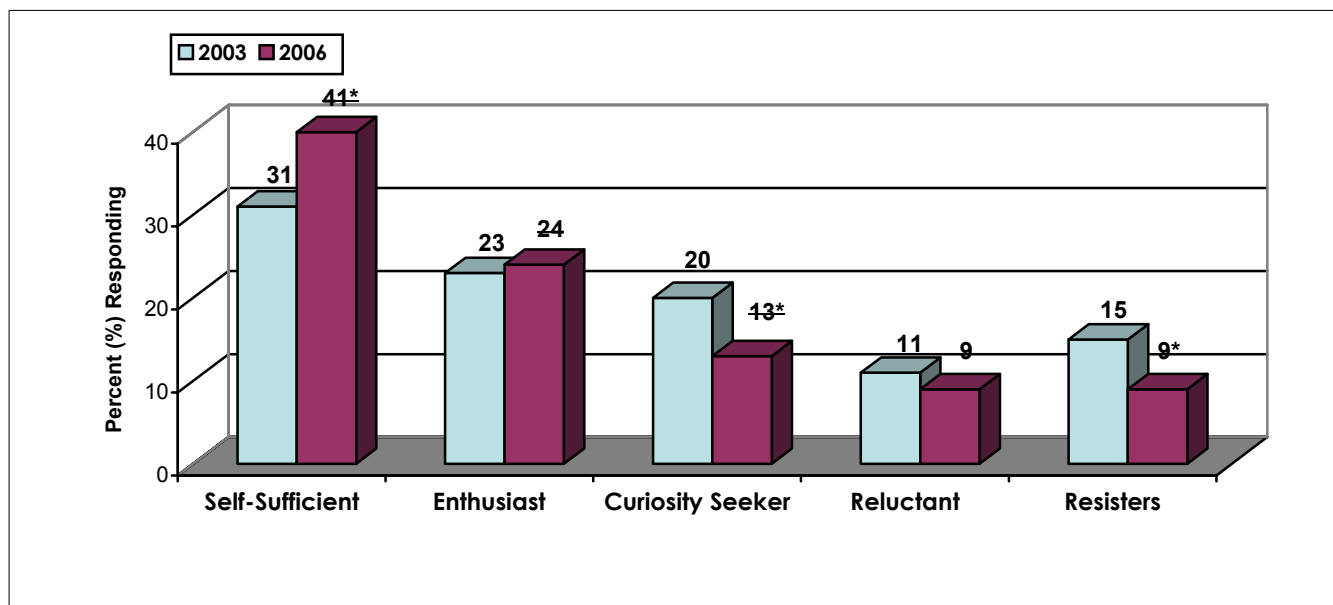
- Post secondary teachers display little outright resistance to instructional technology but still appear to be ambivalent about some aspects:
 - They rate themselves as more “savvy” but are ambivalent about the importance of technology – a bit more than half view it as highly important.
 - Satisfaction with technology implementation is even lower – barely one third are highly satisfied.
 - In addition to the previously discussed instructional technology “challenges” faced by post secondary teachers, there is evidence that technology has not been instrumental in helping them achieve key teaching and learning objectives.
- **Satisfaction versus importance of instructional technology** – the level of importance assigned to instructional technology (54% - highly important) far surpasses the level of satisfaction with its implementation (38% - highly satisfied). Technology satisfaction levels have barely improved since 2003 and do not compare favourably with the much higher proportion (49%) which is highly satisfied with achieving their teaching objectives.

Chart 8 – Importance Versus Satisfaction With Technology



- **E-segment profile** – since the inception of this research, efforts have been made to establish a psychological profile of the target audience, reflecting their level of confidence in their expertise (by selecting one out of five possible ratings).
- The chart below demonstrates that there has been movement since 2003:
 - In 2006, almost two thirds (65%) classify themselves at the top end of the scale – as either an “Enthusiast” or as “Self-Sufficient”.
 - There are now fewer than ever that classify themselves in the two “low tech” categories – as “Reluctant” or Resisters”.

Chart 9 – E-Segment Profile



- **Impact of instructional technology on achieving high priority “teaching” and “learning” objectives** – respondents were asked to select those learning and teaching objectives on which instructional technology had had the most impact.
- The summary table below indicates that technology has had some positive impact on achieving on key objectives but the levels are low compared to the impact on lower priority objectives.
- In terms of helping teachers achieve their key learning and teaching objectives (on the first and second-ranked objectives such as encouraging an understanding of subject matter and problem-solving skills), technology has had only a limited impact:

Table 6 – Impact of Instructional Technology On Key Learning/Teaching Objectives

Impact on Key “Learning” Objectives	Impact on Key “Teaching” Objectives
• Understanding Subject Matter (1) – 62%	• Stimulating Learning Environment (1) – 55%
• Problem-Solving Skills (3) – 61%	• Ensure Course Curriculum is Covered (3) – 54%
• Critical Thinking (2) – 55%	
() = Order of Importance	

- In fact, the research shows that instructional technology has had the MOST impact on the LEAST important “learning” and “teaching” objectives such as flexible access to coursework and providing course delivery options which are ranked 9th and 11th, respectively).

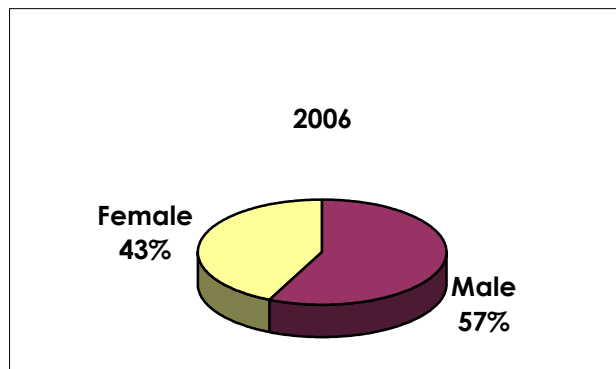
Table 7 – Impact of Instructional Technology On Least Important Learning/Teaching Objectives

Impact on Least Important “Learning” Objectives	Impact on Least Important “Teaching” Objectives
• Independent Learning (5) – 74%	• Flexible Access to Coursework (9) – 86%
• Collaborative Learning (6) – 72%	• Provide Course Delivery Options (11) – 75%
• Self-Paced Learning (8) – 68%	• Measure Student Performance (7) – 74%
() = Order of Importance	

V. DEMOGRAPHICS

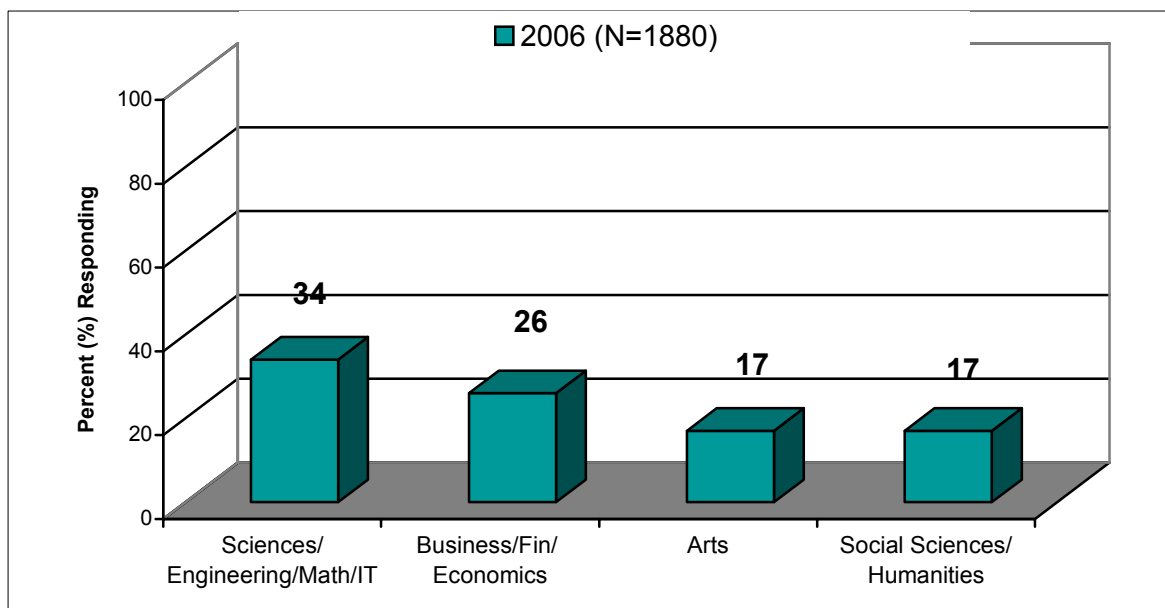
- Detailed demographic information has been collected in a number of areas.
- **Gender** – the increase in representation from female academics has been significant: from 36% to 43% since 2001.

Chart 10 - Gender



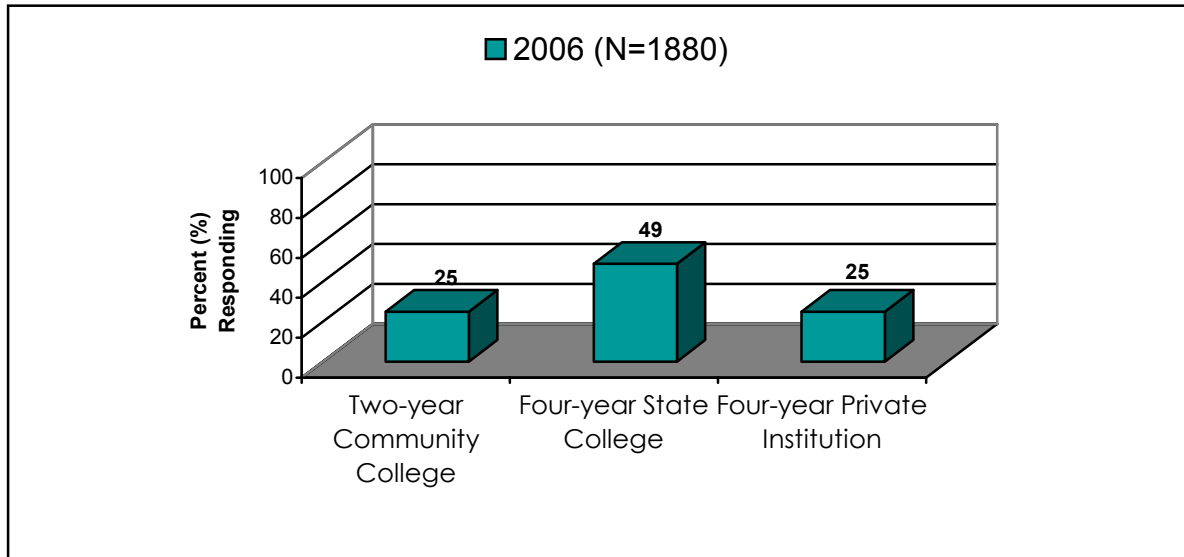
- **Faculty participation** – representation from the four categories of faculty is more balanced than in previous studies, but participation from Arts and Social Science/Health faculty members still continues to lag behind:

Chart 11 – Type of Faculty



- **Type of institution** – the sample composition has not changed in this respect over the course of all three waves of tracking; four-year state colleges account for about half the institutions participating (49%) compared to 25% for two-year private institutions and 25% for two-year community colleges.

Chart 12 – Type of Institution



- **Other demographics** – some changes are observed in other areas:
 - **The average age of respondents is up ever so slightly** – from 51 to 52 years of age, on average.
 - **Average number of years teaching is down slightly as well** – from 16 to 15 years, on average, in both 2003 and 2006.
 - **Average number of courses taught is up dramatically, however** – from 6.2 to 6.8 courses.

VI. CONCLUSIONS AND EMERGING ISSUES

This year's study (2006) represented the third wave of tracking for this research project and it is now possible to view the evolution of teacher attitudes towards their vocation and their teaching environment.

The conclusions can be organized into three areas:

- **Long-term findings and conclusions** – reflecting the changes that have been observed over the three waves of tracking.
- **Discussion points** – which deals with those undercurrents of thoughts and feelings expressed by the target audience in an indirect way.
- **New opportunities** – going forward, what new areas of inquiry or follow-up which can be investigated down the road that would provide additional insight into current findings and conclusions?

Long-term findings – the 2003 research pointed to the increasing importance of instructional technology but, in 2006, the level of importance assigned to technology appears to have stalled:

- Technology continues to be positioned as a tool for curriculum or content delivery rather than as an end in itself. Two things have to occur before satisfaction with implementing technology will increase: teachers need to receive more support (at every level); and technology itself needs to prove it can help teachers achieve important teaching and learning objectives.
- Technology continues to be subordinate to course preparation and development in terms of importance – and teachers are shown to be very satisfied with how well they are achieving their academic objectives (compared to achieving technology objectives).
- In previous waves, university/college teachers tended to overestimate how quickly they would adapt to technology and this year's study has borne that out. Teachers are not radically changing their course delivery approaches: the technology component has increased but not dramatically; they are reverting to combining technology tools with more traditional forms of course delivery; hybrid courses are beginning to surpass dedicated online/distance learning courses in terms of popularity.
- The 2006 research focused to a greater extent on teaching and learning objectives than previously. The impact of technology in this area was measured extensively: teachers are sticking to tried and true teaching tools such as published hard copy texts but are supplementing with a variety of low and high tech tools; similarly, they are utilizing a wider variety of teaching approaches (up to 6 or 7) than ever.
- Teachers are remaining focused in terms of their academic objectives – they have not wavered from their initial commitment to key objectives, such as encouraging critical thinking, problem-solving skills and good teacher-student communication.
- While the importance of instructional technology has not increased, expectations are that technology will be used; this coincides with the sustained frustration of using technology to achieve critical academic objectives.
- Overall teachers are shown to be optimistic – but as the discussion below reveals, there are underlying issues.

Discussion points – study participants utilized the open-ended questions to articulate their thoughts and feelings about specific issues, many of which were extraneous to the core question areas.

Below we outline the more apparent issues:

- **Maturity level/preparedness of students** – study participants indicated a certain amount of disappointment in the “*quality*” of incoming students which were variously described as: poorly prepared (reflecting declining standards and a lack of “*basic skills*”); poorly motivated; less independent and self-sufficient; more “*degree*” than “*education*” oriented; poorly socialized; demonstrating a minimalist attitude towards their education; exhibiting low expectations; poorly disciplined; and less focused.
- **Less teacher influence** – teachers agree that new teaching tools and approaches will help them accommodate the wide spectrum of student needs and abilities they now have to deal with while others realize that technology tools may enhance the learning of the new “*breed*” of students. There is generally a recognition that the delivery of higher level education will be shaped more directly than ever by student needs and requirements: some expect that they will have to “*comply with their students' wishes – to the detriment of education*”; some expect to have to be more accountable and expect to have “*less freedom for teachers to teach as they wish*”; there is some feeling that teaching “*styles*” will have to change to accommodate “*shorter attention spans...more multi-tasking*”. Others expect that new “*paradigms*” will emerge: teaching based on “*what works for the student*” and “*the instantness of today's society*”. For some, there is only hope in the distant future: “*Most faculty have no clue what 'authentic' learning experiences mean or how to stage*”

them – in 10 years, perhaps, a new dynamic off faculty will be hired who are from the 'learning' generation".

- **Disconnect between students and instructional technology** – a number of study participants wondered how the new breed of students will fit with what they perceive to be more demanding technology-based instructional approaches – which they feel require more and not less discipline: *"Students who are highly motivated will be successful but the average marginal students will need caring instructors...Some students (in my online class) thrive on the independence of the class, some didn't know what they were getting into, some rose to the occasion while others had problems the entire course...The inability of technology to address these problems: short attention spans, a student population incapable of thinking outside the box...(Online) instructions are written by sequential, rational people and that would leave out half my students or frustrate them to the point of despair...Most students lack the discipline to complete courses without having a classroom to report to...I know that technology will blossom within the next five years but I doubt that students will be able to be self-directed enough to do totally online learning at their own pace"*.
- **Impact of technology on teaching/learning environment** – in addition to the direct impact on their personal situations and circumstances, some university/college teachers feel that the impact will be more pervasive: teachers are more likely to be positioned a *"entertainers – with techno-tricks rather than delivering quality information and facilitating development of important skills"*; some feel that the new paradigm will foster *"the instructor as actor, producer and educator"* while others view teachers turning more into *"more of a police force as we verify materials submitted for grades against ever larger databases of published works"*.
- Others feel that teaching roles will evolve into two tiers: *"Conflict between research/teaching demands is increasingly leading to a split between these two roles, with more instruction handled by 'teaching professionals...The tradition of teaching and research combined in one professor is going to be very rare"*. And others talked about the *"delivery divide"* – on the one hand, a premium will be paid for *'face-to-face interaction and instruction from a live professor with universities seeking to extend the reach of their professors through learning technologies'*.
- Whatever happens, there are clearly some who hold more controversial opinions about the future of the teaching profession: *"We will turn into cogs in a machine spitting out degrees, professors will be hired and be replaceable like retail or factory workers...Education is becoming a commodity that can be purchased like a pair of jeans"*.

New issues and opportunities – like any research, this project raised new questions which could be addressed at some future point:

- Financial needs and requirements – this was a fairly high priority demand among target audience members, but needs to be probed and investigated more thoroughly.
- Teacher attitudes towards students – this and previous waves of tracking focused entirely on the attitudes and practices of teachers; however, the character of the student population is having a greater impact on the teaching environment – and may have to be investigated more closely in future.
- Professional development – this aspect was given less emphasis in Wave 5 (due to time and space constraints) but this area is perceived as being closely tied to addressing technology challenges and clearly has to be studied more closely.
- Student profile and challenges – student abilities and skills appear to play a larger role and have more of an impact on teaching practices than ever. This poses a bigger challenge for teachers than previously imagined and may have to be factored into any future analysis of teacher attitudes. A related area of inquiry might consist of teacher attitudes towards the student population.