Project Number: JMW-TRA3 -46

WPI TRANSFER STUDENTS STUDY: AN MBTI PERSPECTIVE

An Interactive Qualifying Project Report

Submitted to the Faculty

of the

Worcester Polytechnic Institute

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

by

Genci Dheri

Genci Dheri

and

Erjon Qirko

Erjon Qirko

Date: May 14th, 2003

Approved:

Professor John M. Wilkes, Advisor

1 - Abstract

Through a lengthy process of data gathering, feedback sessions, transfers comments and analysis, we were able to determine that in fact the transfer students are different from the regular student body that arrived as Freshmen in terms of personality, learning styles and aspirations. We hope that in the future the transfer students arriving at WPI will be included in data collection describing the student body and not assumed to be the same as the rest of the student body. The policies relating to the support of transfers by WPI should be adjusted accordingly.

2 - Authorship Page

Both authors contributed equally to this project.

3 - Acknowledgments

Table of Contents

List of Figures

List of Tables

4 - Introduction

The question has risen as to whether transfer students are substantially different from the rest of the WPI population in terms of learning style and other social and academic characteristics. About 8-10% of the 680 or so Freshmen in each class that come to WPI leave during or after the first year. Hence, 50-60 Transfers come in to take their places in the sophomore or junior class. No special accommodations are made for them. Indeed, they are put through a traditional "Orientation" and then sort of dropped from the Insight Program that follows for the next 4 months of a Freshman's first year. There are practical reasons for this, but it means that WPI didn't rethink New Student Orientation for Transfer students or provide them any transitional support, though it does so for the Freshmen. The transfers are thus administratively assumed to be like "regular" students, but treated as Sophomores, not Freshmen.

This is a comparative study to see if the assumption is warranted that the people who transfer to WPI are really like the people who come here as freshmen, in terms of personality, learning styles and aspirations. Transfers who arrived with the classes of 2004 and 2005, now typically juniors and seniors at WPI (if they have not already graduated) are the focus of study.

Transfer students at WPI (in terms of their learning style and self-images), are considered the same as the regular student body that arrive as freshmen by the administrators that deal with them after admission. Only the admissions department seems to treat them as special cases, and reviews their credentials differently than students coming from high school.

Through a lengthy process of data gathering and analysis we have proven this assumption of similarity after admission to be faulty. We have determined that the transfer students differ from the rest of WPI student population that arrived as freshmen in many respects, such as, Cultural Diversity, Learning Style, Drive to Achieve, Maturity, Confidence and Competitiveness.

The results of our analysis are described throughout our report, which support our claim that indeed transfer students at WPI differ from the rest of the regular student body that arrived as freshmen in several administratively significant respects. We were able to come to such conclusions using the MBTI and CIRP survey data that we and others gathered. The data that we inherited on the Class of 2005 from Sullivan and Meyer (the previous project group, which worked on the same basic study), was especially valuable.

The MBTI questionnaire is our measure of learning style. It identifies people's psychological preferences along four dimensions can be tied to learning style preferences involving group work, curriculum structure, level of detail and most appropriate assessment procedures.

The details of the MBTI will be explained more fully in the following sections. At this point what matters is that 85% of the Freshmen in Class of 2004 and 60% (now 75%) of the Class of 2005 had taken the MBTI at the time we began our study. The MBTI and CIRP were administered to them during Freshman Orientation.

We also used selected questions from the CIRP survey to help us get a better insight on whether the transfer students are substantially different from the rest of the student body. We also used it to check and see if the MBTI type theory would accurately predict other aspects of the transfer students' personalities beside their learning styles.

The Cooperative Institutional Research Program (CIRP) is a national longitudinal study of the American higher education system. The CIRP is the nation's largest and oldest empirical study of higher education, involving data on some 1,800 institutions and over 11 million students. It is regarded as the most comprehensive source of information on college students in the USA, and it is run by the Higher Education Research Institute at UCLA.

The data gathering process consisted of acquiring the 2005 transfer data that we inherited from Sullivan and Meyer and merging it with the 2004 transfer data we gathered ourselves. The dataset that we inherited from Sullivan and Meyer contained the MBTI data and data collected using a modified CIRP survey. It included many of the same CIRP items that were administered to the Class of 2005. CIRP questionnaire that we inherited from Sullivan and Meyer was further modified by us. Sullivan and Meyer were willing to limit their theories about how the Transfers would differ from the students who arrived as freshmen to those areas they could measure with existing CIRP items. We had already done some independent theorizing before we saw the survey. So, we needed to add some items to the transfer student survey to look into the most important of these other issues. We were able to put our version of the transfer CIRP survey online, expanding the available data from the previous project and completing the picture for the class of 2004 Transfer study.

We also gathered the MBTI survey results for the class of 2003 and 2004 and continued the process of data gathering by giving all the transfers (and especially those for whom we had MBTI data) a chance to complete the CIRP survey either on-line, on paper, or in person at a feedback session offered by us and presented by Professor John

M. Wilkes. The feedback session gave the transfer students a chance to ask any questions they might had about the MBTI questionnaire and was also an explanation of their MBTI learning styles, but while we had them there, we tried to administer (or at least distribute), the paper version of the CIRP.

Following that event, we compared the data that we had gathered for the transfers who arrived with the class of 2004 to the data gathered from the transfers who arrived with the class of 2005. We decided, that although they differed, it made sense that they were not the same and the cases could be pooled to produce a dataset of about 55 usable cases out of the 60 we had from all sources. This we would compare with the WPI Class of 2004 MBTI data and the Class of 2002 CIRP data.

At this point, we believed that an adequate amount of data existed for a significant study to be conducted, meaning that the results would be based on a representative sample. However, we had hoped to get better coverage of both annual pools of Transfer students. A 50% larger sample, (75% coverage) was our original goal.

Still, we were able to succeed at something difficult that other people before us had failed to achieve, namely to get a decent sample of Transfer students to fill out the MBTI. One can see the findings of our project, and judge for themselves on exactly how much the transfer students differ from the rest of the regular student body that arrived as freshmen at WPI. We consider them to be significantly different.

5 - Overview

Worcester Polytechnic Institute knows a lot about the learning style distribution (MBTI distribution) of the bulk of the student body – the non-transfer students, since the Myers-Briggs Type Indicator (MBTI) has been administered to them in Freshman Orientation for the last 5 years.

The MBTI questionnaire identifies people's psychological preferences in the ways described by the prior sections, and all four dimensions can be tied to learning style preferences involving group work, curriculum structure, level of detail and assessment exercises.

Unfortunately, the Office of Academic Advising just started to allow the researchers to include the transfer students in the MBTI study, when the class of 2005 arrived in August of 2001. So, this study was designed to focus on gathering data from the students of the classes of 2003, 2004 and the existing data from the class of 2005 was added later on in the project. The attempt to collect data from the class of 2006 was a failure due to a change of data collection procedure, basically an error of judgment by the PLA assigned to handle this matter. She allowed them to vote as a group not to participate, rather than urge them to do so as individuals. Not understanding the study herself, she could not make a case for it. By contrast, the transfer students from 2003 and 2004 were skipped by administrative decision. They were never asked to participate. We intend to change that and would like to include in the study all of the transfer students from these classes still on campus. The transfer students to non-transfer student's comparison study, which was our goal from the beginning, should be carried out with as broad and representative sample of Transfer students as possible.

The MBTI overview covered in the following sections is extracted from the MBTI Manual, Briggs Myers, Isabel, McCaulley, Mary H., Quenk, Naomi L., Hammer, Allen L., 1998.

5.1 - The MBTI Indicator

The purpose of the Myers-Briggs Type Indicator (MBTI) personality inventory is to make the theory of psychological types described by C.G. Jung (1921/1971) understandable and useful in people's lives. The essence of the theory is that due to differences in the way individuals prefer to use their perception and judgment, what seems random variation in preferences and behavior is actually quite orderly and consistent.

Perception involves all the ways of becoming aware of things, people, happenings, or ideas. Judgment involves all the ways of coming to conclusions about what has been perceived. If people differ systematically in what they perceive and in how they reach conclusions, then it is only reasonable for them to differ correspondingly in their interests, reactions, values, motivations, and skills.

In developing the Myers-Briggs Type Indicator, the aim of Isabel Briggs Myers and her mother, Katharine Briggs, was to make the insights of type theory accessible to individuals and groups. They addressed two related goals in the development and application of the MBTI instrument:

1. The identification of basic preferences on each of the four dichotomies specified or implicit in Jung's theory

The MBTI personality inventory ("the Indicator") is based on Jung's ideas about how different ways of perceiving and judging, in combination with different attitudes, describe different types of people. Perception and judgment are mental functions, and attitudes refer to orientation of energy and orientation to the external world. Personality types results from interactions among the four MBTI dichotomies. These dichotomies encompass four opposite domains of mental functioning: opposite ways of perceiving, opposite ways of judging, opposite attitudes in which preferred perception and preferred judgment are typically used, and opposite ways of relating to the world.

2. The identification and description of the 16 distinctive personality types that result from interactions among the preferences.

A type is not created by simply adding together the four preferred ways of functioning, but it is described by Jung and Myers as greater than the sum of its parts because of the different interactions among the four preferences that make up a type. By identifying the preferences, the combinations of preferences, and how the combined preferences operate as whole dynamic types, we can establish effects and put them to practical use.

5.2 - Overview of Psychological Type Theory

Type theory refers to Jung's theory as interpreted by Isabel Myers and Katharine Briggs in the Myers-Briggs Type Indicator personality inventory. The dynamic character specified by type theory involves the interaction of a person's four basic preferences:

Extraversion versus Introversion, Sensing versus Intuition, Thinking versus Feeling, and Judging versus Perceiving. The particular preferences that interact in a person affect not only what is attended to in any given situation but also how conclusions are drawn about what has been perceived. The MBTI classifies Extraversion - Introversion and the Judging – Perceiving dichotomies as attitudes or orientations and Sensing – Intuition and the Thinking – Feeling dichotomies as functions or processes.

Extraversion or Introversion (E-I)

The E-I dichotomy is designed to reflect whether a person prefers extraversion or introversion in the sense intended by Jung. Extraverts are oriented primarily toward the outer world; thus they tend to focus their energy on people and objects. Introverts are oriented primarily toward the inner world; thus they tend to focus their energy on concepts, ideas, and internal experiences.

Sensing or Intuition (S-N)

The S-N dichotomy is designed to reflect a person's preference between two opposite ways of perceiving. A person may rely primarily upon the process of sensing (S), which attends to observe facts or happenings through one or more of the five senses, or a person may rely more upon the less obvious process of Intuition (N), which attends to meanings, relationships, and/or possibilities that have been worked out beyond the reach of the conscious mind.

Thinking or Feeling (T-F)

The T-F dichotomy is designed to reflect a person's preference between two contrasting ways of making a judgment. A person may rely primarily on Thinking (T) to decide impersonally on the basis of logical consequences, or a person may rely primarily on Feeling (F) to decide primarily on the basis of personal or social values. In Jung's and Myer's approaches, the term *Thinking* does not imply intelligence or competence, and the term *Feeling* is not to be confused with *emotional*. Intelligent and emotional expression are independent of psychological typology.

Judging or Perceiving (J-P)

The J-P dichotomy is designed to identify the process a person tends to use in dealing with the outer world, that is, the extraverted part of life. A person who prefers Judging (J) process typically uses either Thinking or Feeling (the judging processes) when dealing with the outer world. A person who prefers a Perceiving (P) process reports a preference for using either Sensing or Intuition (the perceiving processes) when dealing with the outer world.

It is important to note that a preference for one alternative of each dichotomy does not mean that the opposite, less-preferred alternative is never used. Both the theory and practical observations describe individuals as using each of the eight preference categories at least some of the time.

Since the dichotomies are designed to be independent from each other, preferences on the four dichotomies yield 16 possible combinations called *types*, which are denoted by the four letters identifying the poles preferred (e.g., ESTJ, ISTP).

For each type, one process is the leading, or dominant process, and a second process serves as an auxiliary process that provides balance in the personality. Each type has its own pattern of dominant and auxiliary processes and attitudes in which these are habitually used.

The main objective of MBTI is to identify which of two opposite categories is preferred on each of the four dichotomies. The indicator obtains a numerical score based on responses favoring one pole versus its opposite. The letters E or I, S or N, T or F, and J or P are used to designate which of the opposite sides of a respondent's nature are preferred. The intent is to reflect a habitual choice between rival alternatives, even though everyone is assumed to use both sides of each of the four dichotomies, but to respond first, most often, and most comfortably with the preferred functions and attitudes.

The MBTI items require forced choices between the poles of the dichotomy at issue. Choices are between seemingly inconsequential everyday events, chosen by Myers as stimuli to evoke the more comprehensive underlying type preferences.

As evidence that a preference has been accurately reported, MBTI results include an indication of clarity of preference termed *preference clarity index*; the higher the index, the greater the clarity of preference that can be assumed. For example, a person whose preference clarity index for Judging is J 15 could be said to be clearer in this preference than a person with J 10. The characteristics associated with a preference may be less apparent when a low clarity index is associated with a preference, since a low preference clarity index results from almost equal votes for each opposite pair in a dichotomy.

However, it cannot be inferred that a person who has a higher preference clarity index has a greater facility or confidence than another one with a lower preference clarity index.

5.3 - The MBTI theory

Every individual is unique and different from everybody else, but there are patterns of commonality too. All too often the people with whom we interact do not reason as we reason, do not value the things we value, or are not interested in what interests us, but then we find some people who do value and respond to things as we do. The value of the theory underlying the MBTI personality inventory is that enables us to expect specific differences in specific people and to cope with people and their differences more constructively than we otherwise could. Briefly, the theory is that much of human behavior where people have few constrains is not shaped due to chance, but due to the logical interaction and result of a few basic observable preferences.

Jung's initial attempt was to explain individual differences in personality. According to his first observations there were two types of people, extraverts and introverts. Later he subdivided these initial types into eight types by identifying two pairs of opposite mental functions: two opposite perceiving functions, sensation versus intuition; and two opposite judging functions, thinking versus feeling. Perceiving refers to the gathering of information, and judging refers to the manner with which we come to conclusions about what we perceive. Jung further specified which of the two attitudes of extraversion and introversion was likely to be habitually used in conjunction with the

dominant mental function in an individual. The term dominant function refers to the function – Sensing, Intuition, Thinking, or Feeling – that is likely to be used most enthusiastically, most often, and with the greatest confidence. The dominant function can be viewed as directing, or "dominating", the personality.

Therefore, the addition of the pairs of functions to the two initial attitude types led to the specification of the following eight types in Psychological Types:

- Extraverts with dominant sensing

- Introverts with dominant sensing

- Extraverts with dominant intuition

- Introverts with dominant intuition

- Extraverts with dominant thinking

- Introverts with dominant thinking

- Extraverts with dominant feeling

- Introverts with dominant feeling

In developing the MBTI, Myers and Briggs built on statements by Jung that related to the dynamic character of the model. They extended Jung's model by adding the J-P dichotomy, therefore making explicit one aspect of the theory that was implicit but undeveloped in Jung's work. Specifically, they built upon Jung's description of an auxiliary function that supported and complemented the dominant function in every type. Thus the model was refined to describe 16 types:

- Extraverts with dominant Sensing and auxiliary Thinking

- Extraverts with dominant Sensing and auxiliary Feeling

- Introverts with dominant Sensing and auxiliary Thinking

- Introverts with dominant Sensing and auxiliary Feeling

- Extraverts with dominant Intuition and auxiliary Thinking

- Extraverts with dominant Intuition and auxiliary Feeling

- Introverts with dominant Intuition and auxiliary Thinking

- Introverts with dominant Intuition and auxiliary Feeling

- Extraverts with dominant Thinking and auxiliary Sensing

- Extraverts with dominant Thinking and auxiliary Intuition

- Introverts with dominant Thinking and auxiliary Sensing

- Introverts with dominant Thinking and auxiliary Intuition

- Extraverts with dominant Feeling and auxiliary Sensing

- Extraverts with dominant Feeling and auxiliary Intuition

- Introverts with dominant Sensing and auxiliary Sensing

- Introverts with dominant Feeling and auxiliary Intuition

Understanding the way in which the dominant and other functions interrelate in each type requires an explanation of the Extraversion-Introversion (E-I) and Judging-Perceiving (J-P) dichotomies, the two pairs of attitudes or orientations in type theory.

The Extraverted Attitude (E)

In the Extraverted attitude, energy and attention flow out to the objects and people in the environment. The individual experiences a desire to act on the environment, to affirm its importance, and to increase its effect. People habitually taking the Extraverted attitude may develop awareness and reliance on the environment for stimulation and guidance; an eagerness to interact with the outer world; an action-oriented and sometimes impulsive way of meeting life; openness to new experiences; ease of communication and sociability; and a desire to "talk things out."

The Introverted attitude (I)

In the introverted attitude energy is drawn from the environment toward inner experience and reflection. One desires to stay focused on the internal, subjective state, to affirm its value, and to maintain this focus as long as possible. The main interests of the introverted type are in the world of concepts, ideas, and inner experiences. Persons habitually taking the Introverted attitude may develop interest in the clarity of concepts, ideas, and recollected experience; reliance on enduring concepts and experiences more than on transitory external events or fleeting ideas; a thoughtful, contemplative detachment; an enjoyment of solitude and privacy; and a desire to "think things out" before talking about them.

Isabel Myers observed that some people habitually use Judgment in interacting with the outer, extraverted world, being likely to come to conclusions and achieve closure quickly. These people were identified later as having a Judging attitude. Katharine Briggs

described other people as habitually interacting with the outer world using Perceiving, liking to continue gathering information as long as possible before comfortably coming to a closure. These people were identified later as having a Perceiving attitude. These finding formulated the J-P dichotomy, which describes the orientation to the outer world for every type.

The Judging Attitude (J)

In the Judging attitude, a person is concerned with making decisions, seeking closure, planning operations, or organizing activities. For Thinking Judging (TJ) types, the decisions and plans are more likely to be based on logical analysis; for Feeling Judging (F-J) types, the decisions and plans are more likely to be based on weighing and assessing values; but for both TJ and FJ people perception tends to be shut off as soon as they have observed enough to make a decision. In contrast, people who prefer the Perceiving attitude will often suspend judgment to take another look. People who prefer Judging often seem in their outer behavior to be organized, purposeful, and decisive.

The Perceiving attitude (P)

In the perceiving attitude, a person is attuned to incoming information. For Sensing Perceiving (SP) types the information is more likely to be the immediate realities in the environment, what is happening and what is observable. For Intuitive Perceiving (NP) types the information is more likely to be new ideas, interesting patterns, and future possibilities. But for both SP and NP types, the Perceiving attitude is open, curious, and interested. Persons who characteristically live in the Perceiving attitude seem in their

outer behavior to be spontaneous, curious, adaptable, and open to what is new and changeable. Their aim is to receive information as long as possible in an effort to miss nothing that might be important. (Briggs Myers, McCaulley, Quenk, Hammer, 1998).

5.4 - Type Dynamics

When people respond to the items of the MBTI assessment tool, they are not only casting votes for Extraversion (E) or Introversion (I), Sensing (S) or Intuition (N), Thinking (T) or Feeling (F), and Judging (J) or Perceiving (P); they are also providing the information needed to form a hypothesis about their type dynamics. Each four-letter type stands for a complex set of dynamic relationships among the functions (S, N, T, and F), the attitudes (E and I), and the attitude or orientation to the outer world (J and P).

First letter indicates the preference for the Extraverted (E) or Introverted (I) attitude of energy, second letter indicates the preference for Sensing (S) or Intuitive (N) perception, third letter indicates the preference for Thinking (T) or Feeling (F) judgment, and the fourth letter indicates the preference for Judging (J) or Perceiving (P) attitude toward the outer world.

A detailed description of all 16 types and their combination order is shown in Figure 1.

6 - Methodology:

Our project concentrates on the learning styles application of the MBTI, specifically for the transfer students. In fact, the learner's characteristics assessed by various measures of learning styles, cognitive styles, brain patterns, etc. tend to confirm predictions based on the MBTI theory. (Briggs Myers, McCaulley, Quenk, Hammer,

1998). For example, Extraverts value active experimentation and collaborative learning, while Introverts value reflective observation, lectures, and abstract sequential learning. There are some rare findings in the MBTI literature that do not appear to confirm the type theory. (MBTI Manual) These are usually attributable to the combination of small sample sizes with environmental press conditions. We conducted our MBTI study by keeping these factors in mind, since we too will have a small sample under analysis.

CIRP (Cooperative Institutional Research Program) is the nation's largest and oldest empirical study on high education. The CIRP study is regarded as the most comprehensive source of information on college students. The annual report of the CIRP Freshman Survey provides normative data on each year's entering college students.

We used selected questions on the CIRP survey that we felt were more important for an interesting comparison of freshmen to transfer students in a study of WPI students. Some of these items were already known to correlate with certain MBTI dimensions (Hoosik, Marzula, 2001). This would not only help us to get a better insight on whether the transfer students are substantially different from the rest of the student body, but also check if the MBTI type theory would accurately predict the transfer students' learning styles. If not, then there might be an environmental pressure on the transfer students. In fact, this is the purpose of our study; we wouldn't like the transfer students to be treated differently from the rest of the student body in terms of data gathering. To do so assumes that they are like the rest of the student body and we doubt that they are. However, documented differences could be the basis for policy changes that lead transfers to be supported better and makes it more likely that transfers will succeed. This would be a positive development, though *different* treatment might be involved.

	Sensing Types		Intuitive Types	
	With Thinking	With Feeling	With Feeling	With Thinking
Introverts — Judging Types	**ISTJ** I Depth of concentration S Reliance on facts T Logic and analysis J Organization	**ISFJ** I Depth of concentration S Reliance on facts F Warmth and sympathy J Organization	**INFJ** I Depth of concentration N Grasp of possibilities F Warmth and sympathy J Organization	**INTJ** I Depth of concentration N Grasp of possibilities T Logic and analysis J Organization
Introverts — Perceiving Types	**ISTP** I Depth of concentration S Reliance on facts T Logic and analysis P Adaptability	**ISFP** I Depth of concentration S Reliance on facts F Warmth and sympathy P Adaptability	**INFP** I Depth of concentration N Grasp of possibilities F Warmth and sympathy P Adaptability	**INTP** I Depth of concentration N Grasp of possibilities T Logic and analysis P Adaptability
Extraverts — Perceiving Types	**ESTP** E Breadth of interests S Reliance on facts T Logic and analysis P Adaptability	**ESFP** E Breadth of interests S Reliance on facts F Warmth and sympathy P Adaptability	**ENFP** E Breadth of interests N Grasp of possibilities F Warmth and sympathy P Adaptability	**ENTP** E Breadth of interests N Grasp of possibilities T Logic and analysis P Adaptability
Extraverts — Judging Types	**ESTJ** E Breadth of interests S Reliance on facts T Logic and analysis J Organization	**ESFJ** E Breadth of interests S Reliance on facts F Warmth and sympathy J Organization	**ENFJ** E Breadth of interests N Grasp of possibilities F Warmth and sympathy J Organization	**ENTJ** E Breadth of interests N Grasp of possibilities T Logic and analysis J Organization

Figure 1: **Contributions Made By Each Preference to Each Type**

With our goals clear from the beginning, our strategy was simple and the necessary procedure was apparent to us. The research design consisted of six phases.

The first phase was to contact the transfer students individually, and inform them about our project, while setting up means for them to take the MBTI form G on-line,

rather than on paper forms. (Actually we started with the paper format and when the online version became available, we switched over.)

The second phase was to gather the MBTI data and create an accurate file including the gathered data so far and people's personal (and contact) information such as their address, e-mail, their graduation year, and their MBTI score.

The third phase was to follow up on the people still missing in our database, but who had expressed interest in our project in a broadcast email to all Transfer students in the class of 2003 and 2004.

The fourth phase of our procedure was to gather those who had completed the MBTI form G on paper or online and verify the results for every applicant at a feedback session presented by Professor John M. Wilkes. This phase involved videotaping that session, so that we could continue the effort with those who did not show up at that time.

The fifth phase was to administer on paper a modified CIRP questionnaire to the people at that feedback session and also create an on-line version of the same survey to send to those transfer students who did not attend the feedback session.

The CIRP is administered to incoming freshman and designed for them. However Sullivan and Meyer (2003) had identified about a third of the items which were appropriate for the transfers. We added a few items and put it on-line. Since the response rate on the paper format was disappointing (about 12 responses out of 50 transfers, for the class of 2005) we supplied the rest of the class of 2005 with the on-line version as well, concentrating on the 30 cases for which we already had MBTI data.

Finally the 6-th and the last phase, was to complete all the data analysis and report the results in an organized and professional manner.

First phase started as early as September of 2002, and its intent was solely to identify the transfer student body of 2003 and 2004 class, and inform them about our project. In their view, we were only asking their cooperation by filling out the MBTI (g) form at this point. The MBTI (g) form was presented to the transfers (on-line) in these class years due to the fact that their fellow students (in the regular student body of that class year) had filled out the same MBTI form G on paper. Starting with the class of 2006, the form M was administered. The (m) form can only be used if you are computer scoring the results, and at WPI the form M was administered online. We wanted to hand score those that responded on paper and to be able to compare the transfer results to the regular student body. Hence, the form G was preferable.

We started phase one by acquiring the list of transfer student body in those class years from Professor Wilkes. After receiving a list and converting it into a file, we proceeded to contact all of the students in that list. We soon noticed that for the class of 2003 many had already departed the school, for various reasons, such as graduating in two years, (because some had arrived as juniors), or being away on projects outside of the school. Sometimes their e-mail addresses were not functional at the time of our contact and we could not tell if they were still attending WPI. Some of them might have gone to WPI only part time.

Faced with such problems, we decided to try to locate the missing students in our lists by various means, such as the white pages online, and through personal networking. Although we had some success, the bulk of the missing students from the list were impossible for us to locate and contact, as they had moved away from WPI.

We gave up on the class of 2003 and concentrated on the transfers that had arrived with the class of 2004. Sullivan and Meyers had about 30 seemingly representative cases from the class of 2005 (about half of those who arrived that year) to make up for the loss of the class of 2003. We would pool the two datasets at the end.

The first email was delivered by mid September, explaining our project and through it we tried to establish ties with the transfer student body. As people started to respond we start establishing a more accurate database, consisting only of people still at WPI and willing to participate in our study. Although students started to respond to our project, we redoubled our efforts in the hope of having everyone participate. Hence, the first email was followed by more friendly reminders using email and a second explanation as to why the MBTI questionnaire was an important thing for them to fill out. We presented it as a way to describe someone's learning style and promised them personal feedback.

By then, the second phase had begun. With more interaction between us and the transfer student body from the WPI class of 2004, we were able to establish a more precise and reliable database than that, which we had gathered in the first phase of our project. Now we could better weigh the student's desire to cooperate in our project, and also eliminate some of the transfer students that proved impossible to establish a connection with, despite our efforts to contact them. The goal was now to get 50% of the original group, which would be about 75% of those remaining, to participate.

The smaller target sample was now more accurately represented in terms of their email addresses, major, and class. The time had come for us to send out the MBTI form to the students that responded and seemed interested. We were able to present them with

two choices, an on-line version of the MBTI questionnaire, and a hardcopy MBTI (g) form. It was up to the students filling out the questionnaire to decide the way that was best suited to them. More students preferred the on-line version, and a special account was created for them in the website so we could keep track of the students that had filled the MBTI on-line for our project on a day to day basis. A few students preferred to have a hardcopy, so they could fill it out while away from a computer. The form was distributed to those who requested it and the questionnaire was scored by hand for these cases and recorded in our database manually. The Form g online cost more, but was already scored by the computer when we got the results.

Third phase was about to begin, as we started to score the MBTI data and had a close to complete picture of the people who would be the final sample for our study. Their MBTI results as well as their CIRP were to be entered in the data file, so the trick would be to get the CIRP for those who had completed the MBTI already.

The third phase was supposed about to take up only two weeks, giving people still finishing up their MBTI questionnaire a chance to do so. That way we could set up a feedback session to accommodate all the students that had participated in the study at once.

Professor Wilkes explained all sixteen types as part of a feedback and verification session and answered any questions that might have been raised by the students, whom completed the MBTI. At this point, a last and final effort was made by my group to contact all the students that had expressed interest at the beginning, but in general they had not responded a second time, or they had failed to follow through and complete the MBTI on-line after promising to do so. Our efforts including sending out emails and

contacting transfer students that might know other transfer students who had arrived with them and were in the same class year. This effort had a modest yield, though we did our best to gather as many cases as we possibly could in order to have a broader and more representative database. The goal was still to describe how the transfer students differed from the rest of the student body, (those that arrived as freshman at WPI.)

The more cases we had, the better we could claim that our findings were founded on reliable information from a representative sample. The difference between the transfer students and the regular student body was something that we had hypothesized about. By this time, we had more than a fifty percent response rate among those still at WPI. We could go ahead and test our predictions on how the transfer students differ, but were still vulnerable to criticism that the study was too late – that a self selected group of them had already gone (and had gone before our project study started). We planned to deal with that criticism by comparing our data to that which Sullivan and Meyers had gotten for the class of 2005. In that case 60% of the original pool of the 50 students had completed the MBTI, the large majority of them in a brief period during New Student Orientation upon their arrival. Their results were probably representative of the whole group, as they had 50% coverage before anyone left.

Phase four started with setting up a location in the campus center where we could hold our feedback session. In order to give the MBTI results back to the students in class of 2004 that had completed that part of the study (as we had promised), we needed an MBTI qualified person to meet with them. The feedback session was strongly recommended to all of the students, because we wanted to make sure that the students really understood their type, and we could answer all of the questions that might have and

explain any part that might have seem confusing. We also wanted them there to get (and hopefully fill out the on the spot) the CIRP survey, so we promised to feed them too.

The feedback session was held twice in a day in the same room, once before lunch and once before supper to accommodate various schedules. Given the great importance that the feedback session focus, we tried to accommodate everyone, so they all could come and understand the meaning of their results, but being realistic we also videotaped the event. Naturally, some did not make it. The purpose of the feedback session was divided in two parts. One, we were to give the results back to the people that filled out the survey, rather than just emailing the results back to them, but the second reason (just as important as the first one) we planned to distribute our modified CIRP, to people that would come in the feedback session. It was a joint purpose that could serve us very well, and accelerate the completion of our project.

Due to the timing and the location of our feedback session, snacks and soda were available, or the students were allowed to bring their own food, while they listened to the professor explain their results. We also sent out an email letting anyone know that we could meet one to one with a student that could not come to the feedback session. We could show the video tape and explain what wasn't clear enough to them or, answer any questions that he or she might have. All efforts were made, so the students could have a chance of really understanding their type, and thus feel rewarded for the time they spent answering the MBTI questionnaire. This was important if they were to accommodate us by answering a second survey, and urging their friends to do the same.

The CIRP was made available online as well, so we had a better chance of receiving representative distribution of responses.

The end of B term was approaching rapidly, with less than a week to go before it ended, so we decided the wise thing to do before wrapping up the data collection was to send out yet another reminder to anyone still willing to fill out the CIRP on-line (during the break) on their leisure time. This did not produce much new data. We ended the data collection phase at 50% of those still on campus and available from the class of 2004.

The final phase was finally begun at the end of January. The dataset was complete, so was time to start analyzing the differences between transfer students and regular student body. Now we could draw a somewhat clearer picture of the differences and focus on achieving the overall purpose of our entire project. Our database at this point had a few stray cases from class of 2003 and half of those still here from 2004. We will be adding in the class of 2005 cases that we inherited from Meyer and Sullivan. Even though our database is officially complete and adequate, we were still on the lookout for students that might have been skipped, or just now decided to join our project and complete the MBTI or CIRP. We wanted to be as complete as possible even as the analysis got underway.

We are very much interested in knowing other peoples findings on the MBTI distribution. The other IQP team, Sullivan and Meyers report that they have 31 cases from 50 WPI students that arrived as transfers with the class of 2005. They are making the claim that the transfer student MBTI distribution is in general more like that of the general U.S population than that of the students who arrived at WPI as freshman in the same year – August 2001, to be precise.

We are in a position to see if that finding replicates when the class of 2004 dataset is examined separately, and whether it holds overall when the data from the class of 2004 and 2005 classes are pooled.

It is possible that transfer students differ in distribution on the MBTI from year to year, but the WPI freshmen population hasn't done so. It is very similar in distribution from Orientation 1997 to Orientation 2001. Perhaps we will observe a new phenomenon that just starting showing in the recent years and in the future the comparison back to our data collection will make the nature and extent of the change clear. Our project includes a study of transfer students for three classes, two that can be described relatively well for the classes of 2004 and 2005, and few cases for the class 2003. Our data coverage exceeds the 50 percent average level for 2004 and 2005, so we have an adequate sample in order to generalize our results to the rest of the transfer students in those years.

We made every effort to include everyone that might seem interested enough in our project to complete the modified CIRP survey. Hence, an extensive effort was made by our group to contact the people who filled out the MBTI and present them with the two choices (as before), either to fill out the CIRP on-line, or if they desire they can have a hardcopy. Although it was late in the C term when the data collection it was finally complete, the hardcopy choice was made available for two reasons.

The first reason is that some students might not have on-line access over the break or during their leisure time. They might be at work or at their room, but with no access on-line, and they might be reluctant to walk over to the library or the computer lab in order to fill out the on-line version.

The second reason being that some students might ignore the email, thinking that the CIRP questionnaire might be too long, or that they might encounter some surprise on the on-line version. They might want to have a hardcopy so they could make a better judgment about what is involved in terms of the nature of the questions and time commitment. When they see for themselves that it is not too long, and it is actually interesting to fill out, we hoped they would participate.

Time was running out, but we were still determined to gather data as long as we could, since the 50% coverage level of class 2005 transfers had not yet been reached for the CIRP (and still hasn't been). The reason seems to be that about 20 of Sullivan and Meyers 31 MBTI cases were filled out so long ago (during New Student Orientation in August 2001) that they are not able to remember that they filled out this survey, much less why. This was the first time in which transfers were administered the MBTI along with the freshman, which is good in terms of sample representation, but bad in terms of there having been any recent connection or expression of interest in this new study. In the future it is important that all the data be collected in successive waves with short intervals between them, or possibly even all at once to avoid this problem of uneven data coverage.

Finally, the transfer students from the classes mentioned above have had the opportunity to complete the MBTI and the CIRP. They are no longer administrative orphans. The same data that their fellow classmates were strongly urged to complete upon their arrival at Worcester Polytechnic Institute, (when they really did not know they could refuse), has been requested of them.

Are the transfer students really different from the rest of the student body in terms of learning style distribution? We think so. But, whether or not they are, we hope to put an end to transfer students being treated differently than the regular student body, during orientation and in terms of administrative data collection. How the administration conceives of what the student body is like is at issue. If they don't inquire of the transfers, they either think the transfers are like everyone else at WPI, or not important enough, numerically to be taken into account. We think this lapse is the source of misleading views and lack of support for transfer students' that has affected them negatively, so it is our goal to correct the picture of the Transfer populations, self image, aspirations, learning styles, why they come at WPI and their expectations about what will happen while they are at WPI.

7 - MBTI Analysis

Table 1 shows the MBTI distribution by class year in percents from the data collected during freshman orientation. We see that the distributions for the class of 2004 and the class of 2005 are almost the same. However there are some variations for INFP and ENFP types. In the class of 2005 the INFP types occurs less than half as often as the same type for the class of 2004. This means that we have fewer imaginative and independent *helpers*; fewer tuned to possibilities than practicalities; and fewer introverted feeling types, compared to the class of 2004. Moreover, we also have fewer ENFP types in the class of 2005 than the class of 2004. That means there are fewer enthusiastic planners of change, which pursue inspiration with impulsive energy and seek to understand and inspire others (Briggs Myers, McCaulley, Quenk, Hammer, 1998). The

extraverted intuition mental process is less common in the class of 2005 as compared to the class of 2004. Of course this could be sampling error, since the class of 2005 sample is smaller and less complete than that of the class of 2004.

However, with all that said, considering the number of people who took the MBTI in the class of 2005 as compared to the class of 2004, and observing that the proportion of other 14 types are very similar between both class years; we decided to use the dataset of both classes for a better picture and more reliable estimate of what a typical class year looks like. Arranging these datasets together also helps us generalize about the transfer students and their substantial differences with the rest of the student body.

MBTI TYPE	CLASS OF 2001	CLASS OF 2002	CLASS OF 2003	CLASS OF 2004	CLASS OF 2005	CLASS OF 2006	6-YEAR MEAN
ISTJ	14	10	13	11	14	10	12
ISFJ	4	4	2	4	4	3	4
INFJ	3	4	2	3	3	1	3
INTJ	7	8	8	8	6	9	8
ISTP	8	8	7	8	9	8	8
ISFP	2	4	2	2	3	3	2
INFP	9	9	9	7	3	8	8
INTP	12	15	15	15	14	15	14
ESTP	5	5	5	5	5	6	5
ESFP	2	3	3	3	4	4	3
ENFP	7	8	9	11	7	12	10
ENTP	9	11	10	11	12	6	9
ESTJ	6	5	5	7	5	6	6
ESFJ	3	2	2	2	2	2	2
ENFJ	3	2	3	2	2	3	2
ENTJ	5	3	4	3	5	4	4
TOTAL # OF CASES	545	602	625	616	404	470	3262

Table 1: **MBTI Freshmen Distribution by Class Year (in percents)**

When comparing the transfer students with the rest of the student body, we expect to find significant differences in behavior, and possibly in cognitive distribution. We think that the transfer students feel less attached to the social organizations and groups within WPI. They are looking for a solid education often as a means to other ends and are less concerned about social activities than job prospects. We could attribute this behavior to an Introverted way of thinking and perceiving, but we think it is just situational, that even if the distribution of learning styles were the same, they would behave differently. On the other hand we don't expect the distribution of learning styles to be the same either. We think preferences for Extraversion and Perception will be associated with transferring between colleges. Extraverts tend to be more confident, especially about their social skills and making new friends. P's are less tied to routine and stable habit, also making it easier or less costly to relate.

However, we also expect to find that transfer students put a greater emphasis on their academic work and achievements than regular freshmen and have a better understanding of what they want, clearer goals in terms of a career. These are normally "J" qualities. This makes them better at working independently – an Introverted, TJ preference. Knowing what their goals are and having taken action on a plan concerning how to achieve them certainly helps boost their academic capacity and encourages them to manage their time better. This is ESTJ behavior.

Transfer students are starting over, so they aren't afraid of change, but on the contrary, they accept and maybe initiate change. Further, they are starting over at an Engineering school, where it is clearer than it is at a liberal school what the future jobs will look like. There are more lucrative opportunities coming out of technical rather than

humanities education for those who can do the requisite math and science. Either they know themselves better or are simply willing to apply themselves to doing something that doesn't necessarily come easily to them because they have already chosen to seek entry to a career in engineering to get the rewards of higher pay and more job prospects.

The transfer results for the class of 2004 are based on a 55 % rate of participation of all the transfer students of this class year, while the results for the class of 2005 represent about 50 % of all the transfer students that entered with that class.

MBTI TYPE	CLASS OF 2004 (TRANSFERS)	CLASS OF 2004 (FRESHMEN)	CLASS OF 2005 (TRANSFERS)	CLASS OF 2005 (FRESHMEN)
ESTJ	15	7	3	5
ESTP	7	5	10	5
ESFJ	0	2	7	2
ESFP	0	3	0	4
ENTJ	0	3	17	5
ENTP	15	11	7	12
ENFJ	0	2	0	2
ENFP	11	11	10	7
ISTJ	7	11	10	14
ISTP	11	8	7	9
ISFJ	7	4	7	4
ISFP	4	2	3	3
INTJ	4	8	3	6
INTP	11	15	7	14
INFJ	0	3	7	3
INFP	7	7	0	3
Cases	27	616	29	404

Table 2: **MBTI Distribution by Class Year for both freshmen and transfer students (in percents)**

To answer the question of whether the transfer students are substantially different from the rest of the student body, the MBTI results shown on table 1 tell us that there are indeed some obvious differences in the type distributions. What surprises us more

however, are some obvious differences between the transfer students of the two different class years. Even though the freshmen type distribution for both class years shown in table 1 implies a very similar distribution of MBTI types for these classes, the type distribution of the transfer students within these classes is a very different story. Due to the results presented earlier, we will expand our discussion not only to highlight and explain differences between transfer students and the rest of the student body, but also try to understand the differences between the transfer students of these two class years.

7.1 - Comparing the transfers of the class of 2004 with the transfers of the class of 2005

As we explained earlier, because we had similar distributions of the freshmen body for both classes of 2004 and 2005 (shown in table 2), we decided to mix the results of the transfer surveys as well. Surprisingly, we found different distributions when comparing the two transfer samples, which we will present in table 3. Keep in mind that the Class of 2004 is self-selected in that they took (or did not) in response to our contacting them. By comparison, the class of 2005 sample took it as a standard part of orientation and it was just a matter of which half of the students were there on the given day. We understand that there was some follow-up, but most of the data was collected from whoever was there that day in the orientation program.

MBTI TYPE	CLASS OF 2004 (TRANSFERS)	CLASS OF 2005 (TRANSFERS)
ESTJ	15	3
ESFJ	0	7
ENTJ	0	17
ENTP	15	7
INFJ	0	7
INFP	7	0
All other types	63	59
Cases	27	29

Table 3: **Distribution differences between classes of 2004 and 2005 (in percents)**

1. The ESTJ types

While 15 % of the distribution of transfers for the class of 2004 is of the ESTJ type, the distribution for the class of 2005 includes only 3 % of this type. ESTJs are usually described as fact minded practical organizers, analytical, systematic, that push to get things done. So it may be that the distribution of ESTJs for the class of 2005 represents a self-selected part of all the ESTJ transfers that probably are in that class, and if so, it means that ESTJ's are intolerant of the idea of coming to classes early for social events like Orientation. It is equally likely that the ESTJ's were unusually responsive to our call to do this task and followed through when we asked. It is also possible that the ESTJ's take longer to get through the program and more of them are still there after 3 years. If so, other groups may be underrepresented in the class of 2004 to the extent that they go right on through. It could also be a random variation. Let's wait, see the whole pattern and then try to interpret the types most likely to appear in each sample as a pattern.

2. The ESFJ types

None of the ESFJ types in the class of 2004 contributed to the overall distribution of this class, while 7 % of the transfers of the class of 2005 exhibit Extraverted Feeling with Introverted Sensing. ESFJs focus on the present and base decisions on experience and facts. Moreover, they prefer to do things the traditional and accepted way. Even though there were no ESFJ transfer students in the 2004 sample, we think there actually are some, although rare, but that they didn't cooperate. It is also possible that they were there but have all graduated already. Figure 2 shows the MBTI "On Time" college graduation at WPI (Wilkes, McCornick, 2001), which indicates that of all types, this is the one most likely to graduate on time (in 4 years) among the normally admitted Freshmen. They rarely change their minds or fail courses.

Again, let's withhold judgment; look at the whole pattern before interpreting. However, one must consider the possibility that the preferences we mentioned above had a role on their decision of not taking the MBTI when we asked them, and on the rate of speed with which they progress to graduation.

3. The ENTJ types

As mentioned earlier, this is the type for which the distributions are probably the most contradictory of all the cases. We have a 17 % contribution from the class of 2005, while there's no contribution at all from the class of 2004. In fact, it is possible that the distribution of this type from the class of 2005 is more accurate than that of the class of 2004, since the ENTJ's readily see illogical and inefficient procedures and feel a strong urge to correct them.

MBTI (F) and "On Time" College Graduation (in 4 years) at WPI
WPI Class of 2001 (57% officially graduate "On Time")

			The extreme types	
SJ (166 cases)	70%	(116)	ESFJ (18)	78%
SP (102 cases)	62%	(63)	ENFP (47)	40%
NJ (103 cases)	66%	(68)		
NP (234 cases)	52%	(122)		
Total (605 cases)	61% (369) of those who filled out the MBTI			

Figure 2: **MBTI "On time" graduation at WPI**

In fact, when we asked the people to fill the MBTI, we explained to them that we are doing this because we didn't like the fact that the transfer students are skipped year after year. Being natural leaders and organization builders, who seek new ideas and have a strong sense of justice, we think that ENTJ's would respond to such an appeal and would be unusually likely to participate in our project. However, if there are any ENTJ's in the transfers' student body of the class of 2004, they did not respond. The ENTJs of the class of 2004 formed only 3 % of the freshmen, which at least makes our results consistent with the idea that it is a rare type to begin with.

Another difference that is worth mentioning is that our appeal is coming 1 year later in their already shortened program. 2005 transfers were sophomores arriving with the class of 2005, but who joined the class of 2004. At the same time, those arriving with the class of 2004 were joining the class of 2002 or 2003. Thus, we would be collecting

data too late to find any of those who arrived with 2 years of background. Those who stayed on schedule would have already graduated (or could have failed and dropped out). The ENTJ's could have been there initially, but they might just have a plan that involved a scheduled transfer from another (2 year) school. Thus, they may have arrived as juniors who didn't really change their major or their plans and finished in 2 years (on schedule), and be gone. If so, the program came easily to them, to have no one running late.

4. The ENTP types

Even though the ENTP type is more common in the class of 2004 than that of the 2005, the average distribution for the transfer students across both classes is no different than for the rest of the student body. The Extraverted Intuition with Introverted Thinking types are described as constantly scanning the environment for opportunities and possibilities, seeing patterns and connections not obvious to others. Thus when we told them about our project and its importance, it is possible that they were disproportionably likely to respond. Alternatively, it may be that ENTP's are typically not on schedule and take longer than the ENTJ's to get through WPI. They might also change their minds more and be arriving with less completed coursework and a less firm plan on arrival for how to complete their major.

5. The INFJ types

The average distribution of transfer INFJ types is no different from that of the student body; however it looks like this contribution is not evenly split between the two classes (they are all from the class of 2005, namely 7%). We believe that the results of

the class of 2004 are more or less consistent with what happens when the group is only 3 % to start with, we have only 30 cases, and we are looking for 1 case to appear. Though a rare and usually reserved type, there is a possibility that they could finish early and be gone before we collected data, since they are NJ's and like the INTJ's might have an unusually easy time getting through the program on time.

6. The INFP types

Last but not least, we see that this type is more common in 2004, the year that the transfers self-selected to take the MBTI. On the other side, we don't think that the data for the class of 2005 are inconsistent with the percentage one would find in the general population.

Since the INFP's want to be involved in work that contributes to both their own growth and inner development and those of others, there is no doubt we expected INFP's to participate in our project. However we did not theorize a specific reason for INFP's to be more or less common in the transfer students than in the freshmen class, and as our results show, there's indeed an equal proportion of this type among both the transfers and the freshmen.

Looking at the overall pattern, it seems that the key to understanding the transfer differences for those arriving with the class of 2004 and 2005 is to remember the time difference in the 2 rounds of data collection. The 2005 data set is on arrival, probably approximating the original distribution of students joining the class of 2003 and 2004. On the other hand, the 2004 data set is of the students joining classes of 2002 and 2003, and

half of them are gone. These are probably the ones who planned their transfer to follow two years elsewhere and stayed on schedule. If they struggled or transferred in with three years or more work left, they are still here for us to study.

So the ENTJs are gone, while the ENTPs are still here (and their original proportion increases to the extent that the others leave), and the ESTJs and ESFJs are still here as well. Perhaps, it is not so easy for them to complete an engineering degree. They are behind schedule or transferred in from other majors with more left to do. They are not as good at fit with the faculty either, which is INT for the most part. If they feel unsupported or are struggling, they might be unusually responsive to our appeal. We see the following pattern:

1 – Even though F's would seem to be more likely to respond to our appeal, anyone who has struggled and felt misunderstood would be responsive to our appeal alluding to misunderstanding and unfair treatment by WPI.

2 – P's are more likely to drag out their program and arrive with more to do too. Thus, they are less preplanned and it takes longer to finish. Further, they are less task oriented, it doesn't bother them to stay longer and explore a bit.

3 – N's have an easier time doing engineering in general, as abstract and conceptual things appeal to them and they have a better natural rapport with the faculty.

Thus, the class of 2005 sample is more representative of what the class of 2004 originally looked like, with the possible exception that the ESTJ's are impatient with things like Orientation Group Building exercises and are no longer attending after the

first day of Orientation. They might be underrepresented in 2005, overrepresented in 2004, or both. However, at any given time we will have more of the people who take longer to finish and are on campus 3 or more years. Thus, in order to approximate the total pool of transfers currently on campus (not the original that arrived), we'll treat them as equally important components of the transfer population, effectively weighting in favor of those that stay longer.

7.2 - The MBTI differences between transfer students and the rest of the student body

Table 4 shows the average distribution in percentage for both classes analyzed, and compares it with the general population.

TYPES	TRANSFERS	FRESHMEN	GENERAL POPULATION
ESTJ	9	6	10-12
ESTP	8.5	10	5-7
ESFJ	3.5	4	10-12
ESFP	0	3.5	6-9
ENTJ	8.5	4	3-5
ENTP	11	11.5	4-7
ENFJ	0	2	3-5
ENFP	10.5	9	6-8
ISTJ	8.5	12.5	12-16
ISTP	9	8.5	5-7
ISFJ	7	4	10-13
ISFP	3.5	2.5	5-7
INTJ	3.5	7	3-4
INTP	9	14.5	5-6
INFJ	3.5	3	2-3
INFP	3.5	5	4-5
Cases	56	1020	*SOURCE*

Table 4: **Average MBTI distribution in percents for both class years (2004 and 2005)**

The idea to compare our data with the MBTI distribution for the general population came as a result of significant distribution differences found on comparing the distribution of WPI freshmen with the rest of population (Sullivan and Meyers noted the same pattern). Apparently, the rare types found in the general population, such as INTPs or INTJs, are more common among WPI students (Figure 3) (Martin, 1997).

Figure 3: **MBTI Distribution for the General Population**

Thus, if the distribution of types for the transfer students is closer to that of the general population, it can be assumed that transfers stand between the WPI student body and the general population. We think that means that people of this type rarely know they want to do engineering early on, but are more likely to transfer in to a place like WPI

later on, for reasons that are different for the Foreign and Native born students. The Foreign students are probably changing schools to get into a better program and not changing majors. Some Native students are coming out of 2 year schools and were saving money for 2 years, but also are not changing majors. The other Native students probably are changing majors as well as schools lured by the greater opportunities and pay of engineering as a job market.

From table 4, we see that the following types are overrepresented when transfers are compared to the freshman: ESTJs, ENTJs, ISFJs, and ISFPs for the transfers, and ESFPs, ISTJs, INTPs, and INTJs for the freshmen. In the following part we will discuss the relationships between these types to highlight possible differences between transfer students and freshmen body by seeing which group is more like the general population.

7.3 - ESTJ versus ISTJ

ESTJs are more common among the transfer students, while ISTJs are more common among the students arriving as freshmen. While ESTJs combine an Extraverted Thinking with Introverted Sensing, the ISTJ have an Introverted Sensing with Extraverted Thinking. According to Briggs-Myers, the ESTJs are likely to be objectively critical, decisive, clear, and assertive. They are matter-of-fact and pragmatic. Therefore people see them as conscientious, dependable, decisive, outspoken, and self-confident. (Briggs-Myers, 1998).

On the other hand, ISTJs are sensible, detached and reasonable. People see them as calm, reserved, serious, consistent, orderly, and valuing traditions.

It is interesting to notice that even though these two types differ from each other, in each case the larger representation is the part of the student body more like the proportion of that type which you would find in the general population. For example, ESTJ's make up 9% of of the transfers. Hence this type is closer to the general population of 10-12% of this type than the 6% of Freshmen who are this type. Thus, this type is less likely to start out wanting to be an engineer (apply as Freshman), and more likely to be attracted to it later (apply as Transfer). Extrinsic (tangible) rewards like pay, power, and job prospects would matter to them. ISTJ's in the student body simply represent their normal proportion in the general population, but are underrepresented as transfers. Perhaps they are too sensible, restrained, and habit bound to risk the change and disruption of a transfer in order to change majors even when the tangible rewards are potentially great. On the other hand, they are not underrepresented among the Freshmen. E's tend to be more self confident and driven to achieve success. Introverts are more responsive to other intrinsic considerations, such as the fit and natural feel of the job. They feel less likely to seek power over others. ESTJ's are the most common type among managers, and technical training is a common route to industrial management.

7.4 - ENTJ versus INTJ

While ENTJs are overrepresented in the transfer student body, INTJs are overrepresented in the freshmen student body. This time around, the transfers are disproportionately   Extraverted Thinking with Introverted Intuition as opposed to the Introverted Intuition with Extraverted Thinking that is disproportionately found in the

rest of the student body. Briggs-Myers describes ENTJs as analytical, logical, decisive, assertive, global thinkers, innovative theorizers and planners. (Briggs-Myers, 1998) People see them as direct, challenging, decisive, objective, fair, and stimulating. INTJs are described on the same book as insightful, creative synthesizers, long range thinkers, concise, rational, and detached. The others see them as private, reserved, hard to know, cool, conceptual, original, and independent.

The ENTJs are stereotypical entrepreneurs, while the INTJs are more generally stereotypical engineers. The difference is in willingness to take personal risks to ride the tide of change upon seeing opportunities.

Compared with the general population, we see that the students are overrepresented with both ENTJ's and INTJ's, the former among the transfers and the latter among those arriving as Freshmen. Initially WPI attracts only its share of ENTJs, the same as the general population. However, the transfers are twice as likely to be of this type. By contrast, WPI attracts twice the general population percentage of INTJ's to its freshmen class. The later transfers of this type are just the proportion found in general population.

7.5 - ISFP versus ESFP

Moving on, we see 3.5 % ISFP types among transfers and 2.5% among the freshmen, compared to twice that proportion in the general population.
Clearly this type is not too likely to be attracted to the technical professions, and it is unwise to take too seriously the 1 % difference found in the small sample of transfers and

state that they are a bit more like the general population than the freshmen. It is probably not a statistically significant difference.

Among the ESFP's the freshmen population is again about half the general population percentage one would find of this type. It may be telling that there were no transfers of this type at all. Given their description, it is clear that studying engineering would be a struggle for learners of this type.

Introverted Feeling with Extraverted Sensing types are described by Briggs-Myers as trusting, kind, considerate, sensitive, gentle, concrete, and factual. They are seen by other people as quiet, reserved, private, and tolerant (Briggs Myers, McCaulley, Quenk, Hammer, 1998).
The Extraverted Sensing with Introverted Feeling types however, are described as specific, active, involved in immediate experiences rather than delayed gratification, generous, optimistic, persuasive, warm, sympathetic, and tactful. They are seen by others as resourceful, supportive, outgoing, fun-loving, and playful.

When compared to the general population, even though these types are not common in the WPI student body, the freshman population is closer to the distribution of that specific type in the general population than the transfers.

7.6 - ISFJ versus INTP

Finally, the last overrepresented types are ISFJs for the transfers and INTPs for the freshmen. Though these types look difficult to relate with one another, by looking at table 3, we can clearly see that the proportion of the ISFJs for the transfer student body is closer to the rest of population than that found among the WPI freshmen. By contrast, the

distribution of INTPs for the freshmen body is a totally different story when compared to the general population. There are 3 times as many of them among the Freshmen as one would find in the general population. Therefore, for both of these types, the transfers are closer to the general population than the WPI freshman student body. They are transitional between the two. One type is rare among WPI freshmen, the other unusually common; however in both cases the transfers stand in between, with more ISFJs and fewer INTPs than the freshmen population, but fewer ISFJs and more INTPs than one would find in the general population.

7.7 - Where do the transfer students stand?

In order to answer this question, we divided the dataset (table 4) into the four separate functions, as shown on table 5.

TYPES	% TRANSF	% FRESHM	% GENPOP	TYPES	% TRANSF	% FRESHM	% GENPOP
E	51	50	50-55	I	49	50	45-50
S	49	51	65-70	N	51	49	30-35
T	67	74	45-55	F	33	26	45-55
J	44	43	55-60	P	66	57	40-45
CASES	56	1020	N/A	CASES	56	1020	N/A

Table 5: **MBTI dichotomies distribution (in percents)**

Viewed at the level of table 5, the similarities of the freshmen and transfers compared to the general population are highlighted. Only at the level of individual 4-letter types does the story start to come out about transfer differences from the freshmen. Both transfers and freshmen are more N, T, and P than the general population, but the pattern of how the incoming transfers (replacing those that dropped out) reshape the

student body of graduating engineers becomes visible only at the level of comparing the 4-letter types in terms of the proportion appearing in each population.

8 - CIRP Analysis

From our CIRP analysis we saw that there are some differences in several aspects between the transfer students at WPI and the regular student body.

We hypothesize that the transfer students that come to WPI, are less likely to change their minds about their new major, (change what they have chosen at the beginning), than the rest of the student body. Our logic is that the transfer students are more aware of their likes and dislikes in the educational field, due to their experiences at the prior colleges they attended. They have already changed their minds once, and are less likely to do so again. They seem likely to be more focused on their major, and trying to play catch up with the rest of the student body that by now could be more advanced in their engineering studies. We expect transfer students to concentrate more on getting into and through the courses in their major. These must be completed at a faster rate than the regular student body if they want to graduate on time. This can be explained by the fact that they have probably already have taken most of their required social science and humanities classes at their prior colleges. Now they are encouraged to concentrate on their major courses, the ones that were probably not available at the college or university which they left.

The registrar's office at WPI provided us with fairly detailed information on the rules governing transfer students. Transfer students have to attend WPI for at least two full academic years, and the courses that can be accepted from the prior college by the

department heads in their fields are usually not enough for the average transfer to even be considered as sophomores at WPI.

WPI, like every other college, has different mixes of classes and requirements for each major. Often fourteen week classes elsewhere don't map very well onto the division of labor WPI's seven-week classes represent. Generally one cannot transfer all of the classes that the students have successfully finished at the other college. This might mean that the transfer students might have to take that course again, at this institution, in order to take credit for the needed course. Further, more in depth treatments of a 14-week course are typically considered the same as the seven-week versions at WPI. This means that a sophomore coming from a system where eight courses a year is a full load, find their year of work "discounted" into only 2/3's of a WPI 12 course full load for a year.

Transfer students have different reasons for why they transferred to WPI. By communicating and talking with many transfer students about our project, many gave the same answer as their primary reason for transferring to WPI. They said that Worcester Polytechnic Institute has a strong reputation, and is especially well known for its excellent engineering program by employers in the industry. That is one of the most significant reasons for attending WPI, employment opportunity in Engineering. We could cross validate this observation using the CIRP information that we were able to collect during the data gathering part of the project. Seventy two percent of the people that filled out our CIRP survey answered, that it was very important to the transfers, "that this college has a good academic reputation", and the remaining 25% answered somewhat important about the college good academic reputation. No one answered that it was not important at all. Comparing the answers with that of the student body that arrived here as

freshman, we see that as a group they did not place as much emphasis on the academic reputation that WPI offers, compared to the distribution of answers of the transfers.

Another difference we observed is that of the transfers Citizenship. Thirty five percent of the transfers are non-US citizen, compared to only 7.8 % from the freshman student body. This makes sense to us. Non-American transfer students that come to the United States for engineering education from foreign countries often do not have detailed information about the many private colleges here. So they prefer to attend colleges that are well known, those that they have heard about in their home country and have a major reputation, whether they are large or small. Another consideration is to want to be assured of the social diversity that exists in large university environments. A small private college like WPI is at a disadvantage to a place like Boston University initially.

However when they arrive in the states and learn more about the American educational system, they hear more and more about many fine colleges, that give students more personal attention and are stronger in their major field. WPI is a good engineering school with a great reputation in the engineering fields. By contrast, Boston University is strong in the Humanities but mediocre in Engineering. This realization pushes a foreign engineer student towards transferring to WPI, creating the growing diversity on campus that we have today. This diversity comes disproportionately from transfer students.

Another noticeable difference in the transfer students is that they have a better college GPA overall, than the students that are currently enrolled in the college. Their average GPA when transferring at WPI is close to 92%, or A-, while the regular students Coming in from high school need not prove themselves in college courses until they arrive. First year students at WPI average more like (B-) all year long, though they had

an overall A- average in high school. The regular student body freshman do not have to maintain a very high college GPA as freshmen in order to be retained, while transfers (in order to even be accepted at WPI) must have a GPA above 3.2, from their previous college, according to the registrar of WPI. Their High School GPA does not account for much, because they have attended other college after the high school. So the primary admission requirement that exists today for transfers refers to their GPA at their previous college.

A transfer applicant would not apply for admission at WPI unless they were committed and serious about finishing their education in a satisfactory matter. Still, one thing that needs to be noted is that their overall GPA at WPI is lower once they start taking classes here, than it was at their prior college. This could be explained partly by the fast pace of the classes, and unfamiliarity with the seven-week semesters. Most of the schools they were attending prior to WPI were going by three-month semesters. However, the explanation is probably that the high standards behind the reputation that attracted them are a challenge, at least initially. There is no slacking off in a seven week term.

We think that the confusion at the beginning and the new schedule has an immediate negative impact on the transfer's grades- but not their determination. In order for us to investigate if they do recover from this type of confusion at the beginning, we asked a few transfers on how they are doing now, a year later after transferring? Most of them seem to have become familiar with the fast pace of the academic program, and they were satisfied with the progress that they have made in their time at Worcester Polytechnic Institute.

Another visible difference that we encountered in our data was the high "drive to achieve" that transfer students have. Fifty percent of the transfer students responded that they have an above average "drive to achieve", compare to 36.9 % of the regular student body for the Class of 2002, based on a survey filled out when they arrived at WPI as freshman. There was no difference at the high end of "drive to achieve" though. Around 25% for each group responded that they see themselves at the highest 10% of Achievement Drive. One would expect that the transfer students might be a bit more aggressive towards academic excellence in order to transfer to WPI, and succeed in their changed surroundings and social life.

So, the transfer students on average are a bit more likely to be driven than the average WPI student. A lot of students feel reluctant to change college, because they might feel comfortable and familiar with the college that they are attending at the time. They might feel uneasy about changing their surroundings and starting from the beginning at different location, so the finding makes sense to us.

Transfer students also reported themselves as more likely to have "leadership ability" based on our data from the CIRP. On "Leadership" 50% of the transfer students reported themselves "above average" compared to the regular student body of 36.4% doing so. Initiative was reported by 57% of the transfers as "above average", compared to 40% reported by regular student body members who arrived as freshman.

Other major differences that we discovered that it could be a great help for explaining the differences that the transfer students have from the rest of the student body is the different average age group that they report. Transfer students are older than the regular students. In our collection of the data, 35.7% of the transfers reported themselves

as being between 25—29 years old, and 50% are between ages 21—24. The student body that enters as freshman is between the ages of 18—22. So as you can see, we found a major difference in that 85% of the transfers are a few years older – and a third are as old as the regular students will be when they graduate, if they do graduate, in 4 years. The age difference could be a major factor in the perception that the transfer students are different from the rest of the student body. The higher average age could be linked to the transfer student's higher desire to achieve and their seriousness about school and the desire to graduate as soon as possible. They may also be more mature and have more pressure to treat college like a job. Some have families and other social obligations. They are less likely to be here for the social life, and focus more on their studies.

Students, who are at an age of 25—29 are less willing to follow the athletic activities or get involved in the social life, than the younger group of regular students, with some 65% under the age of 21 years. Age plays a major role in the desire that the transfers have to graduate as soon as they can. Hence, they stay focused in school, and set aside their other activities for the time being. All together, our data indicates that the age difference between transfers and regular student body is probably larger than most people expect, and it probably very important in terms of attitude. This makes age a significant factor in our understanding how and why the transfer students differ from the rest of the student body.

It could be seen in the first section of the CIRP, under socializing and partying, that the transfer students tend to socialize a little less and party substantially less, compared to the regular student body. This makes sense in terms of the age difference. Consulting with professors was question 3 in section 1 of the CIRP. It seems that the

overwhelming majority of the transfers (72%) stated that they consult up to ten hours a week with the professors, while the regular students group varied much more in their response. About a third (31.9%) consulted with their teachers less than an hour a week, and 27% reported doing so from 1-2 hours. This is a major difference that we discovered among the two student groups. It too could be attributed to the age factor, to the desire of the transfer students to succeed in the new environment, or a combination of two or more factors. Apparently the transfer group sees it as more important to interact with the professor or sees the faculty as more approachable. They are getting as much feedback as they can. In this way they increase their chances of catching up with the rest of the student body and improve their odds of success at their new college.

Also we noticed that there is a major change in the transfer's students reported behavior itself. That change deals with how the transfer students viewed their previous college behavior compared to that at WPI. We determined from the CIRP data that the transfer students are doing things much differently than they used to be doing in their previous college.

The vast majority of the transfer students reported that they are handling things much differently now. Section one of our CIRP was purposely designed to explore that difference. We were specifically focused on the differences in time use and management that the transfer students reported compared to their behavior in the previous college. This change could be attributed to the experience that the transfer students might have gained from before, so they decided to change things in order to better accommodate themselves in their new surroundings. This change could also be explained as having been forcefully imposed on the transfer students by initial problems on arrival at WPI.

Transfer students report having had to change few things in order to assure success, they had to cut down their work for pay hours, partying, socializing, watching TV and going to restaurants and movies. On the other hand they increased attending help sessions, consulting with the professors, studying and reading materials related to their work school. Table one shows us very clearly just what kind of changes they made.

The reader can also draw his/her own conclusion about how significant this change that we encountered through the reports of the transfer student body really was. The fact remains that after changing colleges and transferring to Worcester Polytechnic Institute, the Transfer student report working harder and with more single mindedness. Transfer students reported use of time at WPI and at their prior college.

	Before (Other)	Before (Other)	Now (WPI)	Now (WPI)	Change
	(Average)	Hours	(Average)	Hours	
Studying	2.57	16	3.71	27	+11
Socializing	3.07	21	2.50	15	-6
Consulting	1.71	7	2.07	11	+4
Attending Help Session	1.36	3	1.79	8	+5
Sports	2.00	10	1.71	7	-3
Partying	2.00	10	1.71	7	-3
Working for pay	2.57	16	2.50	15	-1
Volunteer Work	1.71	7	1.50	5	-2
Student clubs	1.64	6	1.79	8	+2
Watching TV	2.50	15	2.14	11	-4
Reading magazines	2.43	14	2.29	13	-1
Going out	1.86	9	1.79	8	-1
House work	1.79	8	2.00	10	+2
Playing Videogame	2.00	10	1.57	6	-4
Differences at WPI			1.86	1.86	

Table 6: **Changing Patterns of Transfers Before and Now**

So, one can see from table 6, changes that occur when transfers come to WPI and their dedication and effort that they make here. The shift in attention is impossible to ignore given the existence of such findings. However, in order to better understand what table 6 shows us, we have to interpret the results drawn from such findings and thus, come to understand what the numbers represent, or mean, in terms of changed life style.

Section one in the CIRP that was administered to the transfers (either the on-line version, or the hard copy) was specially modified by our group in order to better understand the changes that had occurred among students after changing from one school to another – a shift in academic environment. The questions were somewhat altered, but retained the same response categories that were used in the original CIRP. Section one consisted of sixteen questions and it had six choices among the answers respectively.

While attending previous your college, how much time did you spend during a typical week doing the following activities? How much time do you spend at WPI?

Answers:
1- **None**
2- **Less than 10 hours**
3- **10-20 Hours**
4- **20-30 Hours**
5- **30-40 Hours**
6- **Over 40 Hours**

Table 7: **Explanations of Answers in table 6**

So, as one can see there was a lot of difference on average between the two sets of answers. For instance the average 2.50 has a lot of difference between 2.14. As we can see from table 7, there is about 4 hours difference between them, which means for this particular example that the students are watching three hours less TV than before.

Now let's analyze the results of section one in orderly manner, observe them, so we try to determine a pattern that could be helpful to us in explaining the differences between the transfer students and the freshman. The first results, as we see, are that the hours studying increase. The transfer student's study hours increased from approximately 16 hours to 27 hours. That is nearly a doubling of the hours studying, that transfers were doing compared to before. We continue analyzing other categories of section one, next socializing. There is a decrease in the socializing from 21 hours, to less than 15 hours. This could be attributed to the devotion that transfers have dedicated to the new school system they enrolled in. WPI does have a different philosophy and schedule.

Next we continue with two other categories, attending help sessions, and consulting with the professors. Both categories reflect an increase in the numbers of hours that students spend in a week. Sports and partying both face a decrease of 3 hours compared to before, as did working for pay and volunteer work respectively -1 and -2. Could it be that transfers were trying harder to focus in their studying and meeting the new challenges at WPI head on rather then getting pushed aside by the fast paced educational system that WPI offers?

It could as well be that the transfers are more focused on their objective and they have clear goals that they set to achieve graduation in a certain period of time. Both hypotheses could be correct. It is our understanding that transfer students try harder than

the regular student body right from the beginning so they could have the advantage of being prepared for every challenge that they might encounter at the beginning.

A very important question comes at the end of section 1, which is of a great relevance to our project. It was worded as follows: "Do you feel substantially different from the rest of the student body?" The above question was answered in a range of ways. The average answer fell in between the more and less substantial response(1.86, it is close to number 2 meaning Less different from the rest of the student body at WPI). Almost half of the transfers said they feel more, but the majority responded that they don't feel substantially different from the rest of the student body.

This question was one of our most significant parts of the CIRP analysis, because the transfer students themselves could help us answer the question that has gotten our attention and about which we had been wondering all this time. The answers were diverse enough to let us believe that each transfer student had his or her own feelings and opinions, which could not be categorized for the whole group in terms of their feelings and thoughts about WPI. We were able to only record 15 transfer student's responses on this matter, "about how different they feel at WPI?" The frequency distribution of responses about this question is as follows. The majority 8 answered that they don't feel different at all from the regular student body that arrived at WPI as freshmen, while the remaining 6 answered that they do feel very different from the rest of the regular student body.

Although, we found that the transfers differed from regular student body in terms of the goals they set out to achieve, the timeframe in which they want to achieve it, focus on studies rather then socializing, age group and other categories, still every transfer

student can also be viewed as an individual case. Some reported behaviors and self-images different from the rest of the transfer group, but compared to the freshmen the direction of the difference for the transfers was clear.

As we continued our analysis of section one can see that playing videogames and going out also has decreased. Section one was a good indication of the effort and hard work that transfer students are doing here at WPI. When that is a place like WPI, it means that they are usually in a more prestigious and selective college with higher program standards.

Section 2 of the CIRP questionnaire is a section made up of twenty questions, on how the transfer students rate themselves on the traits that were represented in the questions.

Sullivan and Meyer deserve much of the credit for their work in selecting which CIRP items were to be asked of the transfers. We basically followed their lead in removing about 2/3's of the original items as inappropriate for a study comparing transfer students to the regular student body that arrived at WPI as freshmen.

The answers are shown in table 8:

1- Highest 10%
2- Above Average
3- Average
4- Below average
5- Lowest 10%

Table 8: **Answers for section 2**

Each student had these six choices that they could pick as their answer, based on what they rated themselves on the following traits. For the purpose of our project, we focused on the specific traits that we believed were more useful in helping us understand how transfer students, differ from the regular student body that arrived here as freshman. A significant part of the project data that has to be recognized is that the large majority of the freshman students have contributed data compared to the few transfer students that have done so. The regular student body, (the freshman) frequency distribution was always higher than 500 cases, compared to the 32 cases that we have for analysis of the transfer student's self-images.

Table 9, shows how mode (largest single response category) of students answered each of the above questions. In these cases it was an actual majority in the modal responses group. The frequency distribution and the percentage differences are also shown. This is done so that the reader can see and judge for themselves whether the resulting differences noted above are substantial enough to be worth noting. At this point in our analysis, a "significance test" could help us better distinguish whether the differences between the two groups are statistically reliable. However, the "significance test" calculation recommended to us was not possible due to way we set up the datasets. They are stored independently in different formats. We had no single dataset encompassing the two groups, and they were not compatible enough to merge easily. Hence, one could not calculate a significance test like ANOVA using SPSS without a great deal of data reorganization.

	Majority Regular students (Arrived as Freshman)	Frequency Distribution Responses	Modal Answer Given	Majority Transfer	Frequency Distribution Responses	Modal Answer Given	Differences
		(N)			(N)		
1.Academic Ability	48.40%	273	2	62.50%	20	2	+14.10%
2. Artistic Ability	32.40%	183	3	25%	8	3	-7.40%
3. Competitiveness	36.00%	203	2	46.90%	15	2	+10.90
4. Cooperativeness	42%	237	2	40.60%	13	2	-1.40%
5. Mathematical Ability	44%	248	2	43.80%	14	2	-.20%
6. Leadership Ability	36.50%	206	2	43.80%	14	2	+7.30%
7. Public Speaking Ability	34.80%	198	3	34.40%	11	3	-.40%
8. Self-Confidence (intellectual)	35.10%	198	2	46.90%	15	2	+11.80%
9. Self-Confidence (social)	41.70%	237	3	59.30%	19	2	N/A Different Modal Answer Category
10. Self-Understanding	34.90%	197	2	46.90%	15	2	+12.00%
11. Understanding of Others	37.80%	213	2	56.20%	18	2	+18.40%
12. Writing ability	36.90%	208	3	37.50%	12	2	N/A Different Modal Answer Category
Total Cases (N)	564			32			
Table 9	The majority of responses and their frequency of distribution.						

Table 9: **The majority of responses and their frequency of distribution**

The first thing that one notices in table 8 is the number of cases available for the regular student body, which is quite a bit larger than the pool of transfer students, to which they are being compared. This makes sense knowing that the number of the

students in the regular student body that arrived as freshman (in our data comparison for table 9, the WPI Class of 2002) is expected to be much larger than the number of the students who transferred in over the period of 2 years (2000-2002) covered by this study – even if we had gotten them all to participate. Typically WPI admits 680-700 freshmen and 50-60 transfers for the fall semester.

Ten out of the twelve questions in section two were similar for both groups. As one can see answer 2, means "above average", and answer 3 means "average", this could be determined from table 8, where one can see the 6 choices that the students could have answered.

The findings are different when we examined section 1 of the CIRP questionnaire. In section 2 there are more similarities between the two student groups. In this case only two sets of responses fell into 2 different categories; self-nfidence (social) and writing ability. There were answered as "average" for the students that arrived as freshman, class of 2002, while among the transfer students, the majority answered as "above average" for both of the items.

Both groups tended to answer as "average" on question number 1(Academic Ability), but transfer students have a (14.10%) higher percentage on question 1, than the regular student body that arrived as freshmen. This could be consistent with the time and dedication put into academic work evident from other items. Being an "above average" is more likely to be part of their self image, but the average student around them at WPI is stronger than before in their major. Hence, they work harder to stay ahead.

Out of the twelve questions that we have chosen to administer to the transfer students from section two, question 1 was overwhelmingly answered "above average" by

the transfer students group. Specifically, 62.50% answered as being "above average" in Academic ability. A majority of the regular freshmen was not willing to make that claim. Regarding Artistic ability, the regular freshmen were 7.4% more likely to claim that self image, that's 1/3rd of them versus 1/4th of the transfers.

Competitiveness is question number 3, and a higher percentage of the transfer student group sees itself as competitive as indicated by their distribution of responses. The transfers' "above average" category was (10.90%) greater than that for the freshman group. We do not find it surprising that more transfer students rated themselves more competitive than the regular students did. Their greater maturity and knowing what goals they have set for themselves at this point in time could be a factor that could explain this (11%) difference between the percentages of the majority that answered as "above average".

One also finds a 7.30% difference among the answers in question number 6 (Leadership ability). Transfer students had a higher rate in their response as "above average", on this item, which was also mentioned at the opening of analysis. The Cooperativeness, Mathematical ability and Public Speaking ability responses had about the same distribution for both groups. Questions 8 through 12 were the questions that proved to have some of the largest differences between the two groups (comparable to Academic ability and Competitiveness which were described earlier.) Transfer students showed a higher percentage claiming high levels of the characteristic in question on the answers to items 8, 10, 11, about their Self-confidence (intellectual), Self-Understanding and Understanding of Others. Questions 9 and 12 respectively, Self-confidence (social) and Writing Ability also got different responses from the two groups. The students that

arrived as freshman rated themselves as "average" versus "above average". It was vice versa for the transfer student group. These two questions about Writing and Social Self Confidence, were the only items that transfer students responded to differently in their modal response category, compared to the students that arrived as freshman in the class of 2002. For all the rest it was differences in percentages of the same modal category.

Sections 3 and 4, of the CIRP questionnaire were short sections designed to retrieve general information from the transfer students. One important question asked them about their age group and was discussed earlier in the analysis section. Another question that seems to be different from the regular student body is the question about their plans regarding housing during the school year. Among students that arrived as freshman, the majority of them planned to live in a college dormitory. Indeed, doing so was strongly recommended to them and they alone were guaranteed space on campus.

In the transfer student group, we observed that "other private home, apartment, or room" was the more common response. The answer on that issue differed for both groups for obvious reasons. Students that arrive as freshman at WPI tend to live in the college dorm's their freshman year, and after the first year they might continue to live in the dorms, but a significant number of students leave the dorms, living off-campus, or in a fraternity or sorority house. Candidly, there is not room for them all to stay on campus if they wanted to, and it is not cheaper to do so. The transfer students (judging their responses) are more likely to find an apartment or room off campus, if they do not live in the area. They are more typical of sophomores in their living arrangements, except that the Sorority/Fraternity option is closed to them.

Section 5, is the last section drawn from the CIRP questionnaire. In section 5, the students are asked to mark one of three possible answers on how important each factor was in their decision to attend WPI. The majority of transfer students marked as very important Worcester Polytechnic Institute's good "academic reputation" and that WPI's graduates "gain admission to top graduate/professional schools", also WPI "graduates get good jobs". The three items mentioned above were the questions that were of greatest interest to us, and as we expected transfer students to place a significant importance on these three points. So, we had a hypothesis regarding these – which was supported by the response patterns.

In summation, we are able to say that, as expected, that the transfer students differ from the regular student body, (the students that arrived at WPI as freshman). A few of the survey items in which we observed the greatest difference between two groups are in the age group and self image. We think that maturity and the experience that transfer students had gained at their previous college as reflecting in dedication, time management and study habits, their determination to succeed at WPI's fast paced academic system has something to do with the differences in behavior and self image reported. Their greater dedication to their studies and their attraction to WPI being based on its academic reputation, (i.e. its excellent engineering programs) rather than other considerations less grounded in academics such as location, cost, or like social life is evident, and consistent with their grades and self perception of their intellectual ability and competitive natures.

9 - Conclusion

Finally, we were able to conclude by answering the question that motivated us from the beginning: Are WPI transfer students different from the regular student body that arrived at WPI as freshman? We were able to determine through a lengthy process of data gathering, feedback sessions, transfers comments and analysis that in fact the transfer students do differ substantially from the regular student body.

Transfer students differ from the regular student body in many aspects. Through the MBTI distribution comparative analysis we were able to determine that transfer students are transitional. By this we mean that they are more like the general US population than the WPI regular student body that arrived as freshmen, but in some respects are more similar to the other students than the general population. In MBTI terms they hold an intermediate position.

We noticed that the two student groups differ in both their learning style (MBTI) distribution and distribution of self images, as measured by the CIRP.
As one can determine from our project findings, the typical transfer student's greater Maturity, Confidence, and Experience (with academics) played a major role in explaining the differences in behavior and attitude between the two groups, especially as they relate to the faculty and select majors.

Once we know about their MBTI distribution and other distinctive qualities it is easy to predict that the transfer students will set up clear goals and try to graduate earlier and to focus more on their academic work along the way, setting aside social life and

extra curriculum activities, considerably more than the regular students are willing to set them aside.

Based on this study, one could speculate that there are other differences between the transfer students and regular student body not documented here that are also substantial and complex. More data with larger and more complete sample coverage among the transfer student group might be necessary in order to examine in greater depth the differences and the causes of such differences. There is a mix of inclination, experience and self image that produces different motivation and behavior pattern than one might find from people in the regular 4 year track to graduation. Even when the Transfer students have the same learning style as a regular student, they might express their learning preferences differently.

These speculations lead us to call for a new study with a larger and more representative dataset to be built up over a few years to help us better understand the differences between the Transfer and Freshmen student groups. In particular, it would be worth testing our theory about who leaves first from among the transfers and whether those who finish first came in from 2 year programs in the same major or not. We have theorized that a certain MBTI type is especially likely to enter WPI by this route, but can't prove it without going into Admissions records currently unavailable to us.

We believe that our dataset is basically representative of the transfer students group at WPI at any given time, so that we conclude, after a thorough analysis of the results that we gathered from both of the surveys (MBTI and CIRP), that the transfer students are significantly different from the regular student body (freshmen) at WPI.

Further, we claim that these differences have administrative implications for working effectively with transfer students.

Much of our attention in this study was focused on data gathering and creating a representative sample of Transfers to which we could compare the existing freshman data. However, one of the lasting legacies of the project is a version of the CIRP suitable for use with Transfer students. The one that Freshmen take is 3 times as long and the items seem fairly inappropriate from the standpoint of the transfer. We were able to succeed in data gathering task only after posting an on-line version of the modified CIRP analysis and gaining access to an existing online MBTI administration site. We also distributed a hard copy of the CIRP survey to the people that attended the feedback session. This combined on and off-line strategy proved successful and we were able to gather enough data from the transfers, by stressing convenience in terms of their busy schedule, to complete the study.

We hope that in the future the transfer students arriving at WPI will be included in data collection describing the student body and not assumed to be the same as the rest of the student body. They aren't. The policies relating to their WPI experience should be adjusted accordingly. Once a Transfer data stream is established, future studies of this type can begin by simply sorting the cases in the database by whether they arrived as Freshmen or not, and get right to analysis. We spent 3 months collecting data, and even so barely met our minimum standards for the class of 2004 dataset.

10 - References

Myers, Isabel Briggs, McCaulley, Mary H., Quenk, Naomi L., Hammer, Allen L., MBTI Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator, Consulting Psychologists Press, Palo Alto, CA., 1998.

Lawrence, Gordon, Looking at Type Series: Looking at Type and Learning Styles, Center for Applications of Psychological Type, Inc., Gainesville, FL., 1997.

Lawrence, Gordon D., Descriptions of the Sixteen Types, Center of Applications for Psychological Studies, Gainesville, FL., 1995.

HERI, 20 Feb 2002, UCLA, 25 Feb 2002, http://www.gseis.ucla.edu/HERI/heri.html

Hoosick, Shannon, & Marzullo, Jesse, "Exploring the Potential for Data Mining at WPI: The class of 2002 Data Set", WPI, 19 December, 2001.

Meyer, Dennis, Sullivan, Jay K., "Transfer Study", WPI, 11 March, 2003.

Wilkes, John M., McCornick, Keith, "What Happens When You Combine Routine Educational Administrative Data With an MBTI Student Body Database?" Poster Session, 14th International Applications of Psychological Type Conference, Minneapolis, Minn. June 25-July 1, 2001.

Martin, Charles R., Looking at Type: The Fundamentals, Center for Applications of Psychological Type, Gainesville, FL., 1997.

WPI Transfer Students Study

The following questionnaire will help us determine whether the transfer students are substantially different from the rest of the student body. It has 5 sections and it will take an estimated time of 7-10 minutes. All your personal information is strictly confidential and will only be used for statistical purposes. Your name and email address will only be used to link with your MBTI data. Thank you again for your help and collaboration.

Please print your name: (Last, First):

_____

Please print your WPI email address:

_____

SECTION 1

While attending your previous college, how much time did you spend during a typical week doing the following activities ? How much time are you spending now at WPI ? (Please mark one).

Studying/Homework:

Other college: WPI:

☐ None   ☐ None
☐ Less than 10   ☐ Less than 10
☐ 10-20   ☐ 10-20
☐ 20-30   ☐ 20-30
☐ 30-40   ☐ 30-40
☐ Over 40   ☐ Over 40

Socializing with friends:

Other college: WPI:

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

Consulting with teachers outside of the class:

Other college: WPI:

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

Attending help/MASH sessions:

Other college: WPI:

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

Exercise or sports:

Other college: WPI:

☐ None

☐ Less than 10

☐ 10-20

☐ None

☐ Less than 10

☐ 10-20

- ☐ 20-30
- ☐ 30-40
- ☐ Over 40

Partying:

Other college:

- ☐ None
- ☐ Less than 10
- ☐ 10-20
- ☐ 20-30
- ☐ 30-40
- ☐ Over 40

Working (for pay):

Other college:

- ☐ None
- ☐ Less than 10
- ☐ 10-20
- ☐ 20-30
- ☐ 30-40
- ☐ Over 40

Volunteer work:

Other college:

- ☐ None
- ☐ Less than 10
- ☐ 10-20
- ☐ 20-30
- ☐ 30-40
- ☐ Over 40

- ☐ 20-30
- ☐ 30-40
- ☐ Over 40

WPI:

- ☐ None
- ☐ Less than 10
- ☐ 10-20
- ☐ 20-30
- ☐ 30-40
- ☐ Over 40

WPI:

- ☐ None
- ☐ Less than 10
- ☐ 10-20
- ☐ 20-30
- ☐ 30-40
- ☐ Over 40

WPI:

- ☐ None
- ☐ Less than 10
- ☐ 10-20
- ☐ 20-30
- ☐ 30-40
- ☐ Over 40

Student clubs/groups:

Other college: WPI:

☐ None   ☐ None
☐ Less than 10   ☐ Less than 10
☐ 10-20   ☐ 10-20
☐ 20-30   ☐ 20-30
☐ 30-40   ☐ 30-40
☐ Over 40   ☐ Over 40

Watching TV:

Other college: WPI:

☐ None   ☐ None
☐ Less than 10   ☐ Less than 10
☐ 10-20   ☐ 10-20
☐ 20-30   ☐ 20-30
☐ 30-40   ☐ 30-40
☐ Over 40   ☐ Over 40

Reading magazines/newspapers/books not related to your academic work:

Other college: WPI:

☐ None   ☐ None
☐ Less than 10   ☐ Less than 10
☐ 10-20   ☐ 10-20
☐ 20-30   ☐ 20-30
☐ 30-40   ☐ 30-40
☐ Over 40   ☐ Over 40

Going to restaurants, movies, etc.

Other college: WPI:

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

Housework/childcare:

Other college: WPI:

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

Playing videogames:

Other college: WPI:

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30

☐ 30-40

☐ Over 40

Prayer/meditation:

Other college: WPI:

☐ None

☐ Less than 10

☐ 10-20

☐ None

☐ Less than 10

☐ 10-20

☐ 20-30　　　　　　　　　　　☐ 20-30

☐ 30-40　　　　　　　　　　　☐ 30-40

☐ Over 40　　　　　　　　　　☐ Over 40

Do you feel more or less substantially different from the rest of the student body at WPI?

☐ More

☐ Less

☐ I do not feel substantially different from the rest of the student body at WPI

How and in what ways do you feel substantially different from the rest of the student body ? (If you answered "No" in the previous question, you can skip this step).

_____

_____

_____

_____

_____

_____

_____

SECTION 2

Rate yourself on each of the following traits as compared with the average person your age. You want the most accurate estimate of how you see yourself. (Mark one on each row.)

Academic ability:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Artistic ability:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Computer skills:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Competitiveness:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Cooperativeness:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Creativity:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Drive to achieve:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Emotional health:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Initiative:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Leadership ability:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Mathematical ability:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Physical health:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Popularity:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Public speaking ability:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Self-confidence (intellectual):

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Self-confidence (social):

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Self-understanding:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Spirituality:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Understanding of others:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

Writing ability:

☐ highest 10% ☐ above average ☐ average ☐ below average ☐ lowest 10%

SECTION 3

What is your age group:

☐ 18-20 ☐ 21-24 ☐ 25-29 ☐ 30+

Is English your native language ?

☐ Yes ☐ No

In what year did you graduate from high school ?

☐ 1997 or earlier ☐ 1998 ☐ 1999 ☐ 2000 ☐ 2001 ☐ 2002

Are you enrolled (or enrolling) as a:

☐ Full-time student ?   ☐ Part-time student ?

How many miles is this college from your permanent home ?

☐ 5 or less   ☐ 6-10   ☐ 11-50   ☐ 51-100   ☐ Over 500

Since leaving high school, have you ever taken courses at any other institution ? (Select all that apply):

☐ Yes, at a community/junior college.

☐ Yes, at a 4-yr. college or university.

☐ Yes, at some other postsecondary school (For example, technical, vocational, business).

If yes, what was your average grade:

☐ A+ or A   ☐ A-   ☐ B+ or B   ☐ B-   ☐ C+ or C   ☐ C-   ☐ Lower than C

What was your average grade in high school ?

☐ A+ or A   ☐ A-   ☐ B+ or B   ☐ B-   ☐ C+ or C   ☐ C-   ☐ Lower than C

Are you:

☐ White/Caucasian
☐ African American/Black
☐ American Indian
☐ Asian American/Asian
☐ Mexican American/Chicano
☐ Puerto Rican
☐ Other Latino
☐ Other
☐ I do not prefer to answer

How would you characterize your political views ?

- [ ] Far Left
- [ ] Liberal
- [ ] Middle-of-the-road
- [ ] Conservative
- [ ] Far right
- [ ] I do not prefer to answer

SECTION 4

Where do you plan to live during the following term ?

- [ ] With parents or relatives
- [ ] Other private home, apartment, or room
- [ ] College dormitory
- [ ] Fraternity or sorority house
- [ ] Other campus student housing
- [ ] Other

What is the highest academic degree that you intend to obtain in this college ?

- [ ] None
- [ ] Vocational certificate
- [ ] Associate (A.A. or equivalent)
- [ ] Bachelor's degree (B.A., B.S., etc.)
- [ ] Master's degree (M.A., M.S., etc.)
- [ ] Ph.D. or Ed.D.

Do you have any concern about your ability to finance your college education ?

- [ ] None (I am confident that I will have sufficient funds).
- [ ] Some (but I will have enough funds).
- [ ] Major (not sure I will have enough funds to complete college).

SECTION 5

Below are some reasons that might have influenced your decision to attend this particular college. How important was each reason in your decision to come here ? (Mark one answer for each possible reason).

This college has a very good academic reputation.

☐ very important ☐ somewhat important ☐ not important

I was offered financial assistance.

☐ very important ☐ somewhat important ☐ not important

I wanted to live near home.

☐ very important ☐ somewhat important ☐ not important

Not offered aid by first choice.

☐ very important ☐ somewhat important ☐ not important

This college's graduates gain admission to top graduate/professional schools.

☐ very important ☐ somewhat important ☐ not important

This college's graduates get good jobs.

☐ very important ☐ somewhat important ☐ not important

I wanted to go to a school about the size of this college.

☐ very important ☐ somewhat important ☐ not important

In admitting students, how much importance do you think this college places on:

Application essay:

☐ a lot ☐ some ☐ none ☐ don't know

Athletic talent:

☐ a lot   ☐ some   ☐ none   ☐ don't know

Extracurricular activities:

☐ a lot   ☐ some   ☐ none   ☐ don't know

Grades transcript:

☐ a lot   ☐ some   ☐ none   ☐ don't know

Letters of recommendation:

☐ a lot   ☐ some   ☐ none   ☐ don't know

Musical/artistic talent:

☐ a lot   ☐ some   ☐ none   ☐ don't know

Race/ethnicity:

☐ a lot   ☐ some   ☐ none   ☐ don't know

Standardized test scores:

☐ a lot   ☐ some   ☐ none   ☐ don't know

Volunteer work:

☐ a lot   ☐ some   ☐ none   ☐ don't know

Thank you.