Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

Strategic enrollment planning phases

1. Preparation
2. Identification of key performance indicators
3. Developing a comprehensive situation analysis (data compilation, research, the SEP dashboard, etc.)
4. Strategy identification
5. Action plan development (business plan for each potential strategy)
7. Develop quantifiable goals and a funding strategy
8. Execution, evaluation, and modification

Session overview

1. Establishing Key-Performance Indicators and Aligning Research
2. Data Required to Develop a Comprehensive Situation Analysis
3. Internal and External Research Checklist
Establishing Key Performance Indicators and Aligning Your Research

Key Performance Indicators
- KPIs are commonly-acknowledged measurements that are directly related and critical to the mission and fiscal health of the institution. (Large items such as enrollment or student quality.)

Performance Indicators
- PI s are important measurements that are indirectly related to the mission and support key performance indicators. (Specific items such as applicants or ACT/SAT score averages.)

What are key performance indicators (KPIs)?

KPIs – Drive strategic enrollment management
- Drive enrollment management
- Provide an indication of the strategic effectiveness of broad, cross-departmental cooperation
- Provide more meaning when compared to those of similar, competing, and/or aspirant institutions
- Are often the most complex, reflecting strategic actions that take considerable time to evolve
- Are supported by and dependent on multiple PIs
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

Performance indicators (PIs) support KPIs
- Often, PIs can be addressed more readily than KPIs; it takes improvement in multiple PIs to impact any one or more KPIs.
- Nearly all PIs are a function of the work done among two or more functional areas.
- Improvements in KPIs and PIs should be an integral part of any institution’s strategic planning regimen.
- Through the planning process, institutions can create a list of PIs to support KPI development.

The interplay between KPIs and PIs
- KPI: Enrollment – Headcount, FTE, on-site enrollment, online enrollment, transfer students, undergraduate/graduate, full- and part-time, geographic origin of students, retention and graduation rates.
- KPI: Student Quality – Average ACT/SAT scores (and 25th-75th percentile), average high school GPA, average college GPA, rank in class.
- KPI: Program Quality – CCISE or NSSE results, student outcomes, capstone course results, placement or licensure exam results, average class size, undergraduate and graduate research, alumni survey data.
- KPI: Market Position – Program awareness, web site traffic, name recognition, market penetration analyses, institutional image studies, employer survey data.
- KPI: Fiscal Health – Gross and net operating revenues, auxiliary income, E&G costs by student sub-groups where specialized programs are provided (academic support), net tuition by academic program, co-curricular program, and student segment (academic ability and need).

© 2017 Ruffalo Noel Levitz, LLC
KPIs are often the most complex, reflecting strategic actions that take considerable time to evolve.

**Example: Full-time Undergraduate Headcount**

- New FT & Transfer
- Graduating Seniors
- Attrition

**FT UG Headcount**

- Funnel Rates
- Selectivity
- Reputation
- Demographics
- Market share
- Discount rate

**Example:**
- Full-time Undergraduate Headcount

- Graduating Seniors
- Attrition

**FT UG Headcount**

- Net $ per student
- Net tuition per student

© 2017 Ruffalo Noel Levitz, LLC
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

KPIs are often the most complex, reflecting strategic actions that take considerable time to evolve
Example: Full-time Undergraduate Headcount

Defining the metric

Table One: Summary of Enrollment Key Performance Indicator’s Pls

<table>
<thead>
<tr>
<th>Enrollment Pls</th>
<th>Five-year mean 2016-17</th>
<th>Metric/Empirical Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inquiries</td>
<td>Total number</td>
<td></td>
</tr>
<tr>
<td>Applicants</td>
<td>Total number</td>
<td></td>
</tr>
<tr>
<td>Acceptance rate</td>
<td>Percent admitted full-time, first-time students</td>
<td></td>
</tr>
<tr>
<td>Undergraduate freshmen</td>
<td>Total number of first-time, full-time freshmen</td>
<td></td>
</tr>
<tr>
<td>Undergraduate headcount</td>
<td>Total number</td>
<td></td>
</tr>
<tr>
<td>Undergraduate FTE</td>
<td>Total number of units attempted divided by 15</td>
<td></td>
</tr>
<tr>
<td>Undergraduate FTE for two-year programs</td>
<td>Total number of units attempted divided by 15 enrolled in two-year programs</td>
<td></td>
</tr>
<tr>
<td>New transfers</td>
<td>Total number of students coming from another institution</td>
<td></td>
</tr>
<tr>
<td>Out-of-state (%)</td>
<td>Percent of student body from non-state residents</td>
<td></td>
</tr>
<tr>
<td>International (%)</td>
<td>Percent of student body coming from other countries</td>
<td></td>
</tr>
</tbody>
</table>
KPIs and PIs should be converted to dashboards
(See Chapter 8 of the SEP book, 2nd edition)

Final thoughts on KPIs

• Typically, KPIs are identified early in the process, especially if the institution has a clear sense of its desired direction or has externally mandated performance metrics.
• Operationalizing of some KPIs may occur later in the process and arise from data collection and the situation analysis.
• Worry less about the distinction between KPIs and PIs than about identifying measures that matter.
• The real key is building a robust SEP dashboard to inform strategy development and business planning, and using that dashboard to monitor and evaluate strategy implementation and outcomes; if you do that, the KPIs and PIs will take care of themselves.

Working session

Task One: KPI Identification

• Sketch out the existing key performance indicators (KPIs) for your institution. Recall that KPIs are measures that determine the success or failure of the institution in fulfilling its mission and vision.
• As you have time, consider performance indicators (PIs) which contribute to each KPI.
Data Required to Develop a Comprehensive Situation Analysis

Strategic enrollment planning phases

1. Preparation
2. Identification of key performance indicators
3. Developing a comprehensive situation analysis (data compilation, research, the SEP dashboard, etc.)
4. Strategy identification
5. Action plan development (business plan for each potential strategy)
7. Develop quantifiable goals and a funding strategy
8. Execution, evaluation, and modification

Definition of Situation Analysis

A systematic collection and evaluation of past and present data, aimed at identification of internal and external forces that may influence the institutional performance and choice of strategies. In addition it will allow a comprehensive assessment of the organization's current and future strengths, weaknesses, opportunities, and threats.
Data drives situation analysis and ultimately strategy development

Data readiness, availability, exploration

What do you know? What do you wish you knew?

© 2017 Ruffalo Noel Levitz, LLC
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

Each planning process will vary because each institution’s planning situation is different.

What data is available
The institutional objectives
What plans/actions exist
The level of commitment
Quality of the existing work

Creating an information-driven culture

Comprehensive Information system and database
Make decisions based on information analysis
Create relevant reports

Four macro data will be required

Environmental data
Market demand data
Community facts
Institutional strength data
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

Three over-arching aspects of data you must know:

- Market Demand: What students and employers want = Relevance
- Competition: Unoccupied market positions = Differentiation
- Program: What we do well = Authenticity

Environmental Data

Projected change in high school graduates
Public and non-public, 2017-18 to 2022-23
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

Develop precise measures of market share

Sample statewide market share analysis

Sample part-time student market penetration analysis
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

**Lost admits by type of institution**

- Specialized schools: 10%
- Associates colleges: 20%
- Public 2-year: 30%
- Public 4-year: 40%
- Private 2-year: 5%
- Private 4-year: 10%
- Typical Student
- Sample U Lost Admits

**IPEDS is a rich source of competitor data**

IPEDS is a rich source of competitor data.

- [www.nces.ed.gov/IPEDS/](http://www.nces.ed.gov/IPEDS/)

**Awareness of our school vs. competition**

- In-state
- Florida
- Georgia
- Alabama
- South Carolina
- Our school
- Milton Coll
- Dover U
- Carter U
- Williams U

© 2017 Ruffalo Noel Levitz, LLC
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

Competitor analysis with cost overlay (lost admits)

Tuition and fees (or net charges)
N=5
N=10
N=21
N=35

Selectivity
N=5
N=14
N=4
N=10
N=5

How price sensitive are your students vs. your competitors? Students at these schools show substantial price elasticity.

Understanding Market Demand

© 2017 Ruffalo Noel Levitz, LLC
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

An overview of top 10 student-planned educational majors: 2004-2014

An overview of bottom 10 student-planned educational majors: 2004-2014

Occupations with the largest numerical growth requiring at least a BA: 2014-24

<table>
<thead>
<tr>
<th>Occupation</th>
<th># of New Jobs</th>
<th>% Change</th>
<th>2014 Median Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered nurses</td>
<td>439,300</td>
<td>14%</td>
<td>$46,640</td>
</tr>
<tr>
<td>Software developers, applications or systems software</td>
<td>186,600</td>
<td>17%</td>
<td>$79,310</td>
</tr>
<tr>
<td>General and operations managers</td>
<td>147,000</td>
<td>8%</td>
<td>$102,750</td>
</tr>
<tr>
<td>Accountants and auditors</td>
<td>142,400</td>
<td>11%</td>
<td>$65,940</td>
</tr>
<tr>
<td>Computer systems analysts</td>
<td>118,600</td>
<td>21%</td>
<td>$82,710</td>
</tr>
<tr>
<td>Management analysts</td>
<td>103,400</td>
<td>14%</td>
<td>$80,880</td>
</tr>
<tr>
<td>Market research analysts and marketing specialists</td>
<td>92,300</td>
<td>19%</td>
<td>$61,290</td>
</tr>
<tr>
<td>Medical and health services managers</td>
<td>56,300</td>
<td>17%</td>
<td>$92,810</td>
</tr>
<tr>
<td>Computer and information systems managers</td>
<td>53,700</td>
<td>15%</td>
<td>$127,640</td>
</tr>
</tbody>
</table>

Establishing KPIs and Developing a Comprehensive Situation Analysis

Gary Fretwell

Occupations with the largest percentage growth requiring at least a BA: 2014-24

<table>
<thead>
<tr>
<th>Occupation</th>
<th>% Change</th>
<th># of New Jobs</th>
<th>2014 Median Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations research analysts</td>
<td>27,600</td>
<td>30%</td>
<td>$76,660</td>
</tr>
<tr>
<td>Cartographers and photogrammetrists</td>
<td>3,600</td>
<td>29%</td>
<td>$60,930</td>
</tr>
<tr>
<td>Biomedical engineers</td>
<td>5,300</td>
<td>23%</td>
<td>$66,590</td>
</tr>
<tr>
<td>Substance abuse and behavioral disorder counselors</td>
<td>21,200</td>
<td>22%</td>
<td>$39,270</td>
</tr>
<tr>
<td>Athletic trainers</td>
<td>5,400</td>
<td>21%</td>
<td>$42,090</td>
</tr>
<tr>
<td>Computer systems analysts</td>
<td>93,300</td>
<td>19%</td>
<td>$97,990</td>
</tr>
<tr>
<td>Market research analysts and marketing specialists</td>
<td>93,300</td>
<td>19%</td>
<td>$97,990</td>
</tr>
<tr>
<td>Information security analysts</td>
<td>14,800</td>
<td>18%</td>
<td>$88,890</td>
</tr>
<tr>
<td>Software developers, applications or systems software</td>
<td>93,300</td>
<td>19%</td>
<td>$97,990</td>
</tr>
<tr>
<td>Medical and health services managers</td>
<td>56,300</td>
<td>17%</td>
<td>$92,650</td>
</tr>
</tbody>
</table>


Sample University’s out-of-state market: All students with a B+ and above GPA

<table>
<thead>
<tr>
<th>Major</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Physician</td>
<td>1,614</td>
<td>1,521</td>
<td>1,620</td>
<td>1,564</td>
<td>1,578</td>
<td>1,622</td>
<td>1,591</td>
<td>1,604</td>
<td>1,622</td>
</tr>
<tr>
<td>Nursing/Health care</td>
<td>1,564</td>
<td>1,551</td>
<td>1,562</td>
<td>1,564</td>
<td>1,551</td>
<td>1,562</td>
<td>1,564</td>
<td>1,551</td>
<td>1,562</td>
</tr>
<tr>
<td>Chemical/Environmental Science</td>
<td>984</td>
<td>971</td>
<td>982</td>
<td>1,003</td>
<td>990</td>
<td>983</td>
<td>1,003</td>
<td>990</td>
<td>983</td>
</tr>
<tr>
<td>Engineering/Biomedical</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
</tr>
<tr>
<td>Environmental Management</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
</tr>
<tr>
<td>Business/Other</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
<td>1,383</td>
<td>1,370</td>
<td>1,382</td>
</tr>
<tr>
<td>Architecture</td>
<td>1,301</td>
<td>1,309</td>
<td>1,312</td>
<td>1,303</td>
<td>1,309</td>
<td>1,312</td>
<td>1,303</td>
<td>1,309</td>
<td>1,312</td>
</tr>
<tr>
<td>Athletic/Coaching</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Agricultural/Forest Science</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Medical/Other</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Sport Medicine</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Engineering/Construction</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Engineering/Construction</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Engineering/Construction</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Photography/Video/Film</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Graphic Arts/Design</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
<tr>
<td>Fashion Merchandising</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
<td>1,075</td>
<td>1,079</td>
<td>1,083</td>
</tr>
</tbody>
</table>

Sample University's out-of-state market: All students with a B+ and above GPA

The Growth of Distance Education

2014 Online Report: Cost Tracking Online Education in the United States

Copyright © 2016 by Babson Survey Research Group, Pearson, and Quahog Research Group, LLC


© 2017 Ruffalo Noel Levitz, LLC
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

Understanding Your Institutional Strength

Understanding your institutional strength

The institution

- Student satisfaction and engagement metrics
- Faculty/staff satisfaction and alignment with student expectations
- Alumni satisfaction/outcomes
- Student attrition research
Overall, met expectations?

Rate overall satisfaction

Would enroll here again

Tuition a worthwhile investment

Our students

Students at other schools

Current student research reveals broad institutional issues...

...and specific institutional challenges

1. I am able to register for classes I need with few conflicts.
2. Tuition paid is a worthwhile investment.
3. There is a good variety of courses provided on this campus.
4. The campus is safe and secure for all students.
5. Faculty are fair and unbiased in their treatment of individual students.
6. Adequate financial aid is available for most students.

Alumni research can inform your institutional strategy

Percent of Alumni

- Master's degree
- Doctoral degree
- Other graduate degree

© 2017 Ruffalo Noel Levitz, LLC
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

Understanding how satisfied students are

![Diagram showing satisfaction levels and institutional challenges/strengths]

Internal and External Checklist

3

Internal research elements

- Enrollment funnel conversion by population
- Academic profile
- Characteristics of entering class
- Student academic interest as they enter
- Flows into academic majors and courses
- Number of students who progress from entering cohorts to graduation
- Academic program capacity and demand
- Financial aid research
- Student satisfaction and engagement research
- Alumni satisfaction research
- Communications data
- Web analytics
- Data directly linked to your priorities and KPIs
Establishing KPIs and Developing a Comprehensive Situation Analysis

Gary Fretwell

Example – Regional funnel management

FTIC Funnels by Region Fall 2017

<table>
<thead>
<tr>
<th>Stage / Region</th>
<th>County 1</th>
<th>County 2</th>
<th>County 3</th>
<th>County 4</th>
<th>County 5</th>
<th>Rest of State</th>
<th>Out of State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inquiries</td>
<td>143</td>
<td>124</td>
<td>118</td>
<td>115</td>
<td>150</td>
<td>139</td>
<td>153</td>
</tr>
<tr>
<td>Applications</td>
<td>139</td>
<td>142</td>
<td>141</td>
<td>137</td>
<td>139</td>
<td>177</td>
<td>177</td>
</tr>
<tr>
<td>Accept Rate</td>
<td>75.5%</td>
<td>91.0%</td>
<td>90.0%</td>
<td>87.0%</td>
<td>91.3%</td>
<td>90.7%</td>
<td>82.7%</td>
</tr>
<tr>
<td>Admits</td>
<td>99</td>
<td>71</td>
<td>108</td>
<td>87</td>
<td>107</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Yield Rate</td>
<td>62.1%</td>
<td>61.1%</td>
<td>61.7%</td>
<td>61.7%</td>
<td>62.1%</td>
<td>62.1%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>143</td>
<td>124</td>
<td>118</td>
<td>115</td>
<td>150</td>
<td>139</td>
<td>153</td>
</tr>
</tbody>
</table>

Example – Academic and co-curricular demand

Academic or Co-Curricular Program Demand

<table>
<thead>
<tr>
<th>Academic Program</th>
<th>Subpop 1</th>
<th>Subpop 2</th>
<th>Subpop 3</th>
<th>Subpop 4</th>
<th>Rest of State</th>
<th>Out of State</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall demand by co-curricular interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example – Retention cohort

Retention Cohort

<table>
<thead>
<tr>
<th>First-time Freshmen</th>
<th>Total</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>612</td>
<td>159</td>
<td>142</td>
<td>141</td>
<td>137</td>
<td>139</td>
<td>177</td>
<td>177</td>
<td>153</td>
</tr>
<tr>
<td>Retaining after 1 semester</td>
<td>143</td>
<td>126</td>
<td>118</td>
<td>115</td>
<td>150</td>
<td>139</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
<tr>
<td>Retaining after 2 years</td>
<td>143</td>
<td>126</td>
<td>118</td>
<td>115</td>
<td>150</td>
<td>139</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
<tr>
<td>Retaining after 3 years</td>
<td>143</td>
<td>126</td>
<td>118</td>
<td>115</td>
<td>150</td>
<td>139</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
<tr>
<td>Retaining after 4 years</td>
<td>143</td>
<td>126</td>
<td>118</td>
<td>115</td>
<td>150</td>
<td>139</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
<tr>
<td>Retaining after 5 years</td>
<td>143</td>
<td>126</td>
<td>118</td>
<td>115</td>
<td>150</td>
<td>139</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
<tr>
<td>Retaining after 6 years</td>
<td>143</td>
<td>126</td>
<td>118</td>
<td>115</td>
<td>150</td>
<td>139</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
</tbody>
</table>

© 2017 Ruffalo Noel Levitz, LLC
Establishing KPIs and Developing a Comprehensive Situation Analysis
Gary Fretwell

External research elements

- Demographic trends
- Number of students expressing specific major interest, including by test score range
- Workforce demand
- Lost inquiry study
- Lost admit study
- Competition analysis
- Market demand analysis
- Price sensitivity study
- FASFA application competition report
- Special population changes
- State-specific data
- Information on possible disruptive innovations

Working session

Task Two: Research Planning

- Review the document: Typical High-Priority Research Checklist.
- Identify which of these research elements are currently available at your institution.
- Identify which should be a high priority for compiling after your return to campus.

Questions and Discussion