

parental involvement, respect for the profession of teaching, influence of corporate executives on the nature of education and on and on.

The act of creating scenarios strengthens our ability to see how current events, actions, and decisions may cause one or another possible future to come true. This is a very useful tool in sorting through the deluge of information that we receive daily. Being able to critically analyze current trends in light of multiple futures empowers us to better choose specific actions and avoid pitfalls in achieving a desired future outcome.

We can use our scenarios to help interpret current events, actions, and decisions and better gauge where the present is going with respect to the four future scenarios that we developed. This gives us a better tool for culling out of the abundance of information available to us each day that information which is of most use. Our scenarios give us a tool to detect “weak signals” about changes that we might otherwise have overlooked. They also provide a language we can use to talk about what’s going on in terms of issues that are important to the group.

2.2 Shaping Our Future - Overview of the Process

The process for developing scenarios is shown in the figure below.

The Shaping Our Future process encompasses two cycles of development: Appreciation and Creation. The steps for the Appreciation phase are:

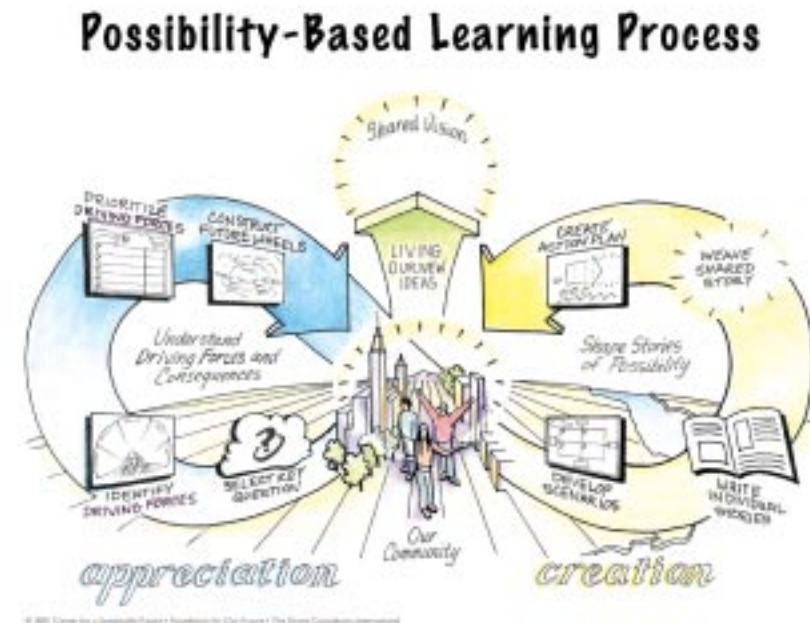
- Prepare to Work Together
 - ~ Review information about issues affecting the future
 - ~ Review process tools for facilitators
 - ~ Do the concentric circles activity
 - ~ Do the ROPES activity
- Develop Key Question and Subquestions
 - ~ Go deeper with the questions
 - ~ Reflect on the key question
- Identify Driving Forces
 - ~ Scan for driving forces
 - ~ Sort driving forces into categories of certain or uncertain and rank their relative importance

- Construct Future Wheels

During the Appreciation phase we also develop a strong working relationship with our team (whether that is a classroom of students, or a group of people who have come together for the first time to explore the future from a common interest)

In the Creation phase we create the space and structure to develop plausible scenario stories that are robust and that paint vivid pictures of what certain futures would look like. These stories form the basis for sharing what the future could be and set the stage for an action plan that we will develop to move toward a preferred future. The steps of this phase are:

- Develop Scenarios
- Write Individual Stories
- Weave Shared Story
- Create an Action Plan and Work On It
- Celebrate Our Accomplishments
- Share Our Work with Other Shaping Our Future Groups



Prepare to Work Together

3.1 Review Sources of Information about Issues Affecting the Future

You are probably already familiar with a variety of sources of information that address issues affecting the future: newspapers, magazines, TV news and special reports, books, conversations with experts, movies, your life experiences and education. All these sources are useful and you will probably draw on them as you facilitate the process. The box provides a few websites that might be useful. These can be shared with the participants during the scanning activity later on in the process. We recommend that you visit these sites ahead of time and decide which you want to use with the group you are facilitating. You may want to print out and copy materials to handout later in the process.

Websites With Useful Resources for Scenario Creating

- World Bank Website for Schools
<http://www.worldbank.org/html/schools/>
- Which World? Global Scenarios for the 21st Century by Allen Hammond
<http://mars3.gps.caltech.edu/whichworld//explore/scenarios.html>
- CIA Global Trends website at:
<http://www.cia.gov/cia/publications/globaltrends2015>
- Creating Preferred Futures - See the resources page in particular
<http://www.cpfonline.org>
- Jim Dator's list of classic futures books.
<http://www.wolfson.ox.ac.uk/~wendy/resources/jimclassics.html>
- Hawaii Research Center for Futures Studies
<http://www.futures.hawaii.edu/>
- Driving Forces- links to lists of driving forces from the following people and sources. Allen Tough, Ken Hunter, Clive Simonds, Seven Tomorrows, John Naisbitt, Bob Theobald, Michael Marien, Future Survey Regent's Task Force, Joe Coates, Roger Caldwell, Christian Science Monitor:
<http://ag.arizona.edu/futures/fut/datdf01.html>
- Anticipating the Future: a course on methods and approaches for studying the future at the University of Arizona
<http://ag.arizona.edu/futures/>
- Good source of driving forces which you can use later (see section 5):
<http://ag.arizona.edu/futures/era/dfmain.html>
- Understanding USA – lots of interesting visual data summaries about many aspects of life in America.
<http://www.understandingusa.com/>
- Chronicle of the Future – Tomorrow's news today: a path from the already familiar landscape of life in 2000 through to the uncharted territories of 2050. Your guides are scientists and experts whose ground-breaking work is already creating the new millennium.
<http://www.chronicle-future.co.uk/chron-content.html> and
<http://www.chronicle-future.co.uk/biographies.html>
- The Wall Street Journal Millennium Edition The Next 1000 Years.
<http://interactive.wsj.com/millennium/millennium.html>

3.2 Review Process Tools for Facilitators

Appendix A provides several facilitation techniques that are useful to beginning facilitators. Read through them to become familiar with what they are, when to use them, and how they work.

3.3 Do the Concentric Circles Activity (adapted with permission from Anti-Defamation League's "World of Difference")

Purpose: Ultimately the work we do is about individuals living in a society with others. We will be thinking about the future and the world, but that means nothing unless we acknowledge our roles as individuals. The work asks that we each consider who we are and what we want out of life. In addition, the work only becomes fruitful when we can share these individual ideas and outlooks with the group. This will require listening and reflecting. This activity is to help the group warm up in these two areas.

Time needed: 30 minutes.

Materials needed: a watch to keep time.

Learning outcomes:

- ~ develop confidence in expressing our thoughts and feelings about different topics;
- ~ sharpen our ability to listen to others; and
- ~ begin to develop a spirit of cooperation and learning with each other.

Learning objectives:

- ~ gain a better sense of who we are as a group;
- ~ learn what is important to each other; and
- ~ practice listening to each other and articulate individual thoughts and feelings more clearly.

How to:

1. Provide participants with a brief summary of the rationale and challenges behind the scenario process upon which they are embarking. Tell them that this activity is to help them get to know each other a little better.
2. Have participants count off by two's (one, two, one, two,...). Ask them to form two concentric circles facing each other - with all the ones in the inner circle facing out and the twos in the outer circle facing in. Tell them that the people in the inner circle will be first to respond to a question. The person facing them in the outer circle will listen and not interrupt as their partner responds to the question. Then the other person will respond to the same question while the other listens. Allow 30 seconds to one minute per individual response; one to two minutes per question.
3. After each pair has responded and listened, have the people in the inner ring move one person to the left. Now ask the person in the inner circle to respond to the second question in the list below allowing 30 seconds to one minutes for a response. Stop the conversation and ask the persons in the outer circle to respond while their partner listens. Repeat the respond-listen, switch, respond-listen procedure for each of the questions below, or as many as can be done in 10 minutes:
 - a. Tell something about you and your first, middle or last name.
 - b. What is your favorite holiday and why?
 - c. What would people be surprised to know about you?
 - d. Talk about one person who has made a difference in your life. Why was this person so influential?
 - e. Tell about a time when you had a positive influence on someone in your life.
 - f. Tell about a time when you might have made a difference but chose not to.
 - g. What is one accomplishment in your life of which you are proud? Explain what made this so satisfying.
 - h. What is one thing you wish you could change about society?

5. Reassemble the group and discuss the following questions:

- How did you feel answering these questions?
- Were some questions easier to answer than others? Why?
- At what points did you feel the most listened to? How could you tell?

3.4 Do the ROPES Activity

(adapted with permission from “Anti-Defamation League’s World of Difference”)

Purpose: Ropes can help us form bonds with each other and strengthen the work we will be doing together. As a group we can define the rules by which we will guide ourselves and the kinds of qualities we want our interactions to have.

Time needed: 30 min.

Materials needed: newsprint paper, markers, tape.

Learning Outcomes:

- ~ define a set of characteristics and rules to guide our interaction over the course of doing the Shaping Our Future institute.

Learning Objectives:

- ~ develop the ability to work cooperatively and agree on the rules that will govern the interaction between us.

How to:

1. Have the participants count off by fives. Tell them that the ones will take the letter R, twos will take letter O, threes P, fours E, fives S.
2. Tell them that in each of their small groups they will brainstorm words and phrases that begin with their letter. The words and phrases should be about the rules and qualities that we want each other to follow and achieve during our experiences together at the Institute. Each group should record their phrases on a large piece of newsprint paper with a description of what each phrase or word looks like in action. One person in the group should write them down as they agree on them.
3. Have the small groups work together for 10 minutes.
4. Have the small groups come back together as a large group. Starting with the R’s have each group share their words and phrases with the entire group. Put the newsprint paper for each group up on the wall to serve as a reminder as the Institute proceeds.

ROPES example from a Shaping Our Future Institute

R

- respect – treat others the way you want to be treated
- responsibility – responsible for your own actions
- revelations – seeing the future

O

- organization – be ready for whatever you plan to do
- outspoken – don't be afraid to speak out
- outgoing – do more than you are expected
- opportunity – give everyone the opportunity to speak

P

- polite – while someone else talks, listen
- potential – don't give up, don't be afraid
- prosperity – come out better than where you started from

E

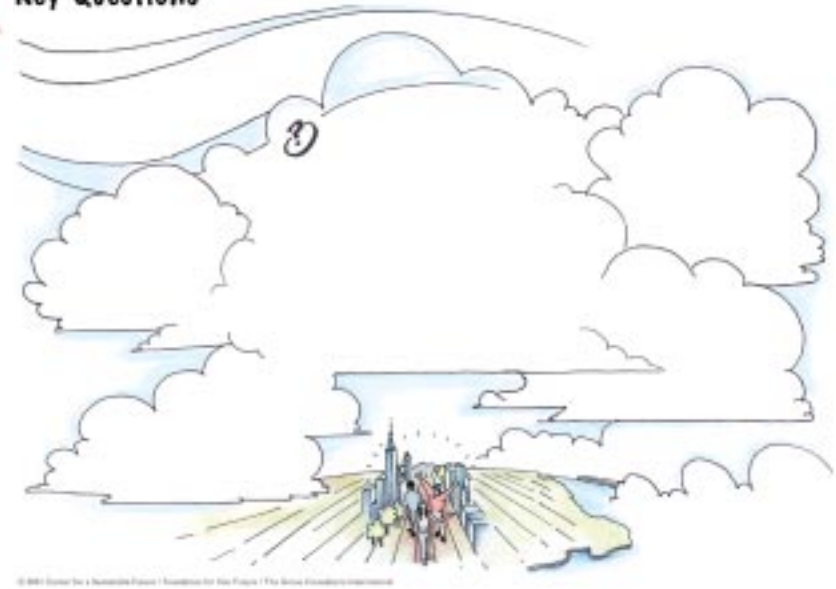
- excitement – enthusiasm
- express – open minded
- excellence – being superb, striving to improve ourselves
- encouragement – uplift your peers, teamwork, leadership

S

- speaking – communicating and group involvement
- success – accomplishing goals, completing assigned tasks
- spirit – encouraging, showing interest, participating and zestful attitude

Develop Key Question and Subquestions

Key Questions



4.1 Select Key Question and Subquestions

Purpose: To select the key question and subquestions that the group's scenarios will address. Note: You can skip this step if you already have a key question. Check to see make sure it is a good question (see Box). Or, you may want to use a more general question such as the following one which works well for a group of people who do not have a previous association and will go their separate ways after the process is completed:

What decisions can I make that will bring a better quality of life to me, my family and my community in the next twenty years?

Time needed: 30 minutes.

Materials needed: One wall-sized Key Questions Template (see Appendix B) for each small group and one wall-sized Key Questions Template to summarize the small groups' results, masking tape, markers, paper, pens.

Learning outcomes:

- ~ gain skill in working as team members and increase our ability to formulate questions that are challenging and engaging.

Learning objectives:

- ~ improve inquiry skills;
- ~ promote collaborative learning; and
- ~ increase our ability to assume and carry out different roles in accomplishing a task.

How to:

1. Instruct students to think about what is important to them personally and to the community they live in. If you are working with the group as part of an ongoing program, you could ask them to think about the organization's purpose or mission and why they are part of the program.

Tell them that as a group they need to decide what key question their scenarios will address. Review the characteristics of a good scenario question (see box on next page). Give them a few minutes to write down some initial questions.

2. Form three or four small groups. Ask each group to select a person to record and one or two to report for the group when the small groups reconvene. Give each group a Key Questions Template on which they will record their questions. Allow 10 minutes for the group to brainstorm questions and get them on their templates.
3. Reassemble the small groups and ask each to share the key questions they brainstormed. On a blank Key Questions template summarize the results of each group as they report out. Group them into categories of similarity. See below for an example of a completed Key Question template.

4. Give everyone a few minutes to look over the summary sheet. Try to suggest a question that encompasses the span of what is there. If you have trouble trying to capture it in a way that seems to create consensus you could have the group vote.
5. If voting is necessary, tell the group that they each can vote for their two most favorite questions. Have each person place a check mark or some other symbol next to his or her two choices on the summary template. Tally up the votes and see which question is the top choice. Check to see if it makes a good question. If not, try to rephrase it in a way that is consistent with the characteristics of good scenario questions (see box).

Important: Tell students that voting does not mean that the other questions are to be discarded and forgotten. They are important and valid and should also be kept in mind throughout the process. Keep the template up for future reference.

Good Scenario questions:



- don't have yes or no answers.
- don't prompt an immediate answer.
- do require reflection and deeper consideration.
- do have a long-term timeframe.
- are about something that has not yet occurred.
- are about a topic or issue that the group is passionate about.



Before I did this, mostly I just thought about as far as my college major, that's probably as far as I've gone. We started talking about family, I never really thought about family before, I never thought past 2005.

~ Shawn

Key Questions

Example of Completed Key Questions Template

THEME

Decisions, Decisions

What kind of morals and character will people have?



• What decisions can I make that will bring a better quality of life to me, my family and my community in the next twenty years?

• **FAMILY and FRIENDS:**

- Do I go with or against family wishes?
- Should I relocate or stay in my community?
- What type of community to live in?

- How to live lightly on earth?

- How to be an informed and responsible voters?

- What kind of entertainment choices/TV watching?

- Who to trust for help?

• **EDUCATION and CAREER**

- Do I graduate from high school and go to college?
- What's my potential for earning money or promotions?
- What kind of work will make me happy and proud?
- What kind of people do I want to work with?
- What capabilities/skills do I want to have?

- How to play together?

- How to keep focused and finish what I start?

- How to consume less and save more?

• **KEEPING HEALTHY** (physically and mentally)

- What will stress us?

- What beliefs, values, religion could I practice?

- What kind of health habits: food, drugs, smoking, exercise?

- How to handle relationships with parents and friends

- What rules to follow or not?

- How can we create safer communities?

- Differences between outward appearance and inner character?



4.2 Go Deeper with Your Key Question - Flashcard Thinking

Purpose: Use this activity to get students to delve more deeply into the questions they have posed for scenario development. Flashcard thinking is a structured creative problem solving process. It stimulates critical thinking, idea finding, and idea capturing. Use this process to help students refine their key questions and subquestions for their scenarios. Note: this step can be skipped if the group is satisfied with their key question and time is limited.

Time Needed: 30 minutes.

Materials Needed: 3 x 5 notecards, writing implements.

Learning Outcomes:

~ demonstrate the ability to think critically, analyze a problem, and generate creative, supportive arguments for both sides of a complex issue.

Learning Objectives:

~ evaluate and select an appropriate issue or question for a scenario construction activity.

How To :

Flashcard Thinking is a brainstorming activity that uses a specific set of questions to stimulate critical thinking about a topic or issue. This is a very fast activity. Students should be given 45 seconds to record their answers to each of the questions. A sense of urgency is an essential element of this process

1. Start with the top three or four questions from the list developed in the previous step. Give each student five 3x5 cards for each question they will work on.
2. Have students write key words or phrases describing the question in the upper right-hand corner of a 3x5 card. Students record their answers on the 3x5 cards. The teacher writes the first issue on the board. The teacher

asks the students the following series of questions. Allow only 45 seconds for students to record their answers and then move on to the next question. Repeat this process for each issue.

Questions:

What is **important** about this issue?

What is **uncertain** about this issue?

What is **certain** about this issue?

What **challenges** does the issue present?

What **opportunities** does the issue present?



Sample Flashcard

Will there be enough fresh water?

important: all life depends on availability of fresh water

uncertain: could cause conflicts among peoples and nations

certain: a necessity of life

challenges: limited supply/increasing demand by growing population

opportunities: water conservation technology and education

3. Once the flashcard thinking process has been completed, have the students review all of their flashcards. They may pair and share their answers, discuss them in teams, individually or as a whole class. When discussion/reflection time is completed the students will select the issue or question around which they will develop their scenarios. You may want to use the Nominal Group Technique to select the question the group will focus on.

4.3 Reflect on the Key Question

Purpose: This activity is used to help students personalize the key question and to identify ways that it is important to them individually.

Time needed: 10 minutes.

Materials: index cards or note paper, tape, pens.

Learning Outcomes:

~ develop the ability to see how an issue is relevant to the future.

Learning Objectives:

~ analyze a question or issue for its consequences; and

~ view an issue or question from the perspectives of others.

How to:

1. Pass out one 3x5 index card to each student and ask him or her to write the key question at the top.
2. Ask each student to quietly reflect on the question about why it is important to his or her own future.
3. Have each student post their responses on the wall and take time to read each other's responses. As a group discuss:
 - How are responses similar?
 - How do they differ?
 - What seem to be the things that are of most interest to the group as a whole?
4. Ask students to keep their cards available for future use. You may want to keep them posted for the duration of the process so that students can refer to them from time to time.

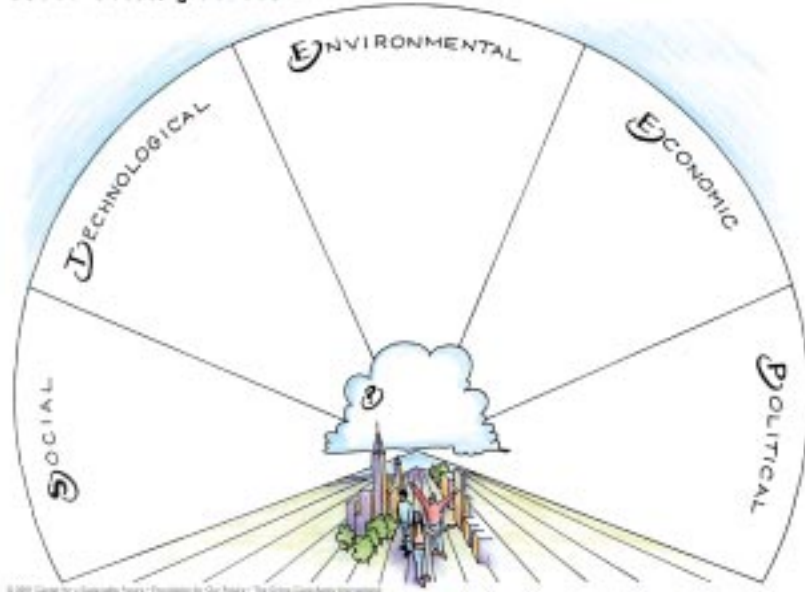
Identify and Organize Driving Forces

What is good information about the future? Simply put, it is information that helps us improve our current performance so that we can achieve a better future. (Morrison, Renfro and Boucher, 1984)

5.1 Scan Sources of Information for Driving Forces

Purpose: This step in the process is a key one. It is where students will research a wide variety of sources and create a deeper base of knowledge about driving forces, issues, and events that affect the future. They will use this knowledge extensively in the remainder of the process.

STEEP Driving Forces



Note: If you are doing the Shaping Our Future Institute within an existing curriculum (such as social studies or environmental science) and students have already researched a variety of topics and have a good base of knowledge you could skip this step. However, you may also want them to focus on topic areas that may not have been covered to broaden the range of information they have to work with.

Time needed: two hours (minimum) up to four hours, or more, if time permits.

Materials needed: For the two-hour version: current periodicals, newspapers, Internet sources, if available. You may want to have students bring in magazines, newspapers, and other print sources from home to build up a pool of sources they can share.

If you can devote more time to the scanning effort you should also use the school and/or local library, Internet, TV, Radio, videos, interviews or visits/presentations by people with expertise in areas of interest. Paper, pens.

If internet access is available, provide students with the list of websites in section 3.1. (also see Box on Examples of Scanning Sources for other possibilities).

Students will also need paper and notebooks or 3x5 cards to keep a “Scanning Journal”

Wall-sized STEEP Driving Forces Templates – one for each of the five small groups and one as a summary template to record the results for all groups (a total of six) (see Appendix B).

Learning outcomes:

- ~ acquire new research skills in trend identification, analysis and forecasting;
- ~ distinguish between fact and opinion by using a variety of sources to support or validate conclusions; and
- ~ enhance critical thinking skills through analyzing and evaluating information, describing relationships among data, and establishing a knowledge base within which we can imagine and experiment with futures-oriented perspectives.

Note: The “jigsaw” process in the how-to below is an effective way to involve students in a combination of cooperative learning and scanning for trends, events and emerging issues. Students simulate what trained futurists often do when scanning for relevant information and at the same time practice working as teams. (This activity is adapted from Spencer Kagan’s design for “expert group jigsaw”).

Learning objectives:

- ~ use data collection, selection and organization strategies to gather and sort both quantitative and qualitative data from multiple primary and secondary sources, and from a variety of media, including electronic media such as the Internet and CD ROM.
- ~ practice proper citation of sources of data;
- ~ interpret quantitative data such as that presented graphs, tables and charts;
- ~ understand and explain the differences among trends, events, and emerging issues; and
- ~ use the internet to gather and analyze information.

As teenagers I think we don’t tend to understand all the things going on right now and we just tend to learn what they’re giving us to learn. This project made us go over all this research and information that helped us in understanding life.

~ Felipe

How to:

1. Explain to students that the future doesn’t arrive unannounced; advance signals of future consequences are being continually transmitted in the present. Scanning is their antenna for noticing and tuning into future possibilities. This powerful process tool involves four basic activities:
 - choosing the sources to scan,
 - scanning the sources for information,
 - determining what information is relevant to the scanning exercise, and
 - deciding how that information can be used.
2. Give students the handout: *Types of Information to Look for in Our Scanning*. Explain to them that they should read it and become familiar with the three types of information: Driving Forces, Events, and Emerging issues. Tell them that they will probably come across all three types of information as they scan and that they should pay attention to all three. However, it is the driving forces that they will be focusing on in the remainder of the process, so those are most important to look for.

Also refer back to the key question and subquestions from the previous steps. Scanning should be aimed at addressing those questions.
3. Explain to students that they will be scanning in five teams, each with a focus area. Those areas are: Social, Technological, Environmental, Economic, and Political (STEEP). Tell students where the resources for the scanning can be located and how to access them. Also explain that each team will become experts in that area and share their knowledge with the other teams in a “jigsaw” process.
4. Tell students that they will be keeping scanning journals to record their scanning “hits”. (see Box on “Scan Hits” and the Scanning Journal). Provide students with the example of a scanning journal entry (see Box with a sample entry).

Note: You may find that you need a STEEP scheme that is more customized to fit your specific content area or instructional goals. (see Box on Examples of STEEP Sub-categories for more. In that case, you may want to add sub-categories).

4. Divide up the class into five teams – one for Social, one for Technological, and so on, through the Environmental, Economic and Political categories. Although the facilitator/teacher may assign students to categories, our experience indicates that students increase their enthusiasm for futures thinking and scenario creating, and are more empowered in their learning, when they are permitted to self-select the areas they are most interested in. After the students have their STEEP categories picked out, the following sequence might be used:

5. *Teams Meet* – Social category students meet in one area, Technological category students gather in another area, Environmental in a third area, Economic in a fourth area, and Political topic selectors in the fifth space.

Note: if you have a differentiated classroom containing students of varying abilities, you may need to negotiate with students to ensure that there is a balance of achievement levels in each of the groups.

Note: Because the STEEP categories are so global, within these broad areas, Tell students that they should discuss how they can break down their broad interests into more specific topics (such as “condition of coral reefs” in the Environmental category), which will result in the teams further dividing into working groups of three, two, or even one student (see box on *Some Example of STEEP Categories*). Therefore, two levels of “teachable moments” are produced: the interdependence among the five STEEP categories, and the relevance of topics within the different STEEP categories.

**Whatever you see on the news it is now.
Before I thought: well this is just what
happened yesterday, but now it's more
like: this is what happened yesterday and
how is that going to affect us in future?**

~ Knista

6. *Teams Consult* – Once the teams have been identified and topics within the STEEP Team members have been delineated, students can initiate their cooperative scanning activities. After the scanning is done the team should meet and share their findings. Have them record their driving forces on the STEEP template in the section that corresponds to their focus area.

7. *Teams Create and Practice a Plan for Sharing Scanning Results* – Teams and subgroups with the teams design and practice a plan for sharing the findings of their research (scanning) both within the team and with the other teams. In this way, the students become “experts” in their topic areas.

8. *Demonstration of Knowledge* – Students present their findings of driving forces in a presentation format – overheads, poster board, chart paper, PowerPoint or other presentation software or other media – to demonstrate their expertise derived from the scanning activity. This step of the jigsaw process not only reinforces the learning of the particular STEEP category team but also enriches the knowledge base of the other teams in the class.

9. *Record Driving Forces for each STEEP Area* - As each group presents their findings, record the driving forces that they identified on the STEEP Driving Forces Template. As you do this look for opportunities to combine and group driving forces to minimize the number of items on the list. Use this template for the Prioritizing step which follows.

Note: If time allows, you may want to have students delve deeper into their scanning hits (see box on *Questions for Extending the Learning value of the Scanning Activity*).

See page 27 for example of completed STEEP summary template.

Examples of Scanning Sources			
PERIODICALS	WEBSITES	NEWSPAPERS	JOURNALS
American Demographics	BBC	International Herald Tribune	Future Survey
Discover	Census Bureau	New York Times	Futures
Economist	CNN	USA Today	Futures Research Quarterly
Fast Company	Creating Preferred Futures	Washington Post	New England Journal of Medicine
Fortune	Environmental News Network		Technology Horizons in Education
Futurist	Global Trends (U.N. Cyberschoolbus)		
New Scientist	Foundation for Our Future		
Newsweek	NASA		
Time	Wired News		
World Press Review	Worldwatch		

Handout for Students: Types of Information to Look for in Our Scanning

Driving Forces are descriptions of phenomena occurring in the community, nation, region and world that show movement (either increasing or decreasing) over time. Driving forces are never static. They are dynamic and should be expressed as such. People easily comprehend driving forces because such forces are often mentioned in media such as newspapers, news magazines, television and the Internet. Some examples of driving forces are:

- faster integration of new technologies into everyday life - and the workplace;
- increasing pressure on the Earth's life support systems;
- decreasing rainforests;
- heightened movement toward economic globalization.

Events are single, occurrences with far-ranging implications for the future in terms of public opinion and policy. Some examples of events with this sort of impact are: Presidential elections; the cloning of Dolly the sheep; and the passage of the North American Free Trade Agreement.

Emerging issues refer to subtle movements that most people haven't noticed yet. Often these changes have not made it to the mainstream press. Emerging issues are usually first revealed in professional trade journals, so-called "fringe" media and "alternative" publications, and by experts in the field. Here are some examples: in the 1960s organic health food was an emerging issue — now it is mainstream; in the 1970s personal computers represented an emerging issue — now PCs are mainstream; in the 1980s the democratization of authoritarian governments was an emerging issue — now democracy is the aspiration of nearly every nation in the world; in the 1990s biotechnology was an emerging issue — now it is a force increasingly to be reckoned with. Can you think of an example of an emerging issue in the year 2000 that is likely to become mainstream in another 5-10 years?

“Scan Hits” and the Scanning Journal

By keeping a “scanning journal,” we are able to structure our research findings, maintain them in an orderly fashion and, therefore, are less likely to become lost in the process of divergent thinking promoted by scanning. A recommended method of starting and maintaining a scanning journal is to select several information sources including periodicals, web sites, newspapers and journals to monitor (or scan) on a regular basis – daily, weekly, monthly – then record in the journal notations of trends, events and emerging issues. Such information is known in the futurist profession as “scan hits”.

Another benefit of scanning and the scanning journal is the practice we get in proper citations of our research. Whatever citation method the teacher is used, it is important to include at minimum the source and date of the “scan hit,” the author/reporter of the item, a brief (2-3 sentences) summary of the finding, and a short description of its implications for the future. While the focus may be on one STEEP category and topic within that category, the learning process is enriched and extended by finding and recording items in all five STEEP categories. If the particular scan hit fits into more than one of the STEEP categories, note that on the journal page, as well. **(Note:** it can also be effective to relate the scan hit to our own life experiences; that is, consider the implications of the identified trend, event or emerging issue for the future in an objective sense, and how this hit affects you personally and your community?)

Sample Scanning Journal Entry

Title	SOURCE	SUMMARY	FUTURE IMPLICATION
Virtual Reality as a Means of Experiencing Nature	Worldwatch Sept/Oct 1996 by David Orr	We will be able to reinvent habitat and species using Virtual Reality (VR).	Will we still want to visit real places? Could VR cause us to value nature less? Could we see VR as better than the real thing?

Some Examples of STEEP Sub-categories:

SOCIAL	TECHNOLOGICAL	ENVIRONMENTAL	ECONOMIC	POLITICAL
Community Education Culture Values Gender issues Race Lifestyles Arts Health Spiritual Demography Children/Youth Peace/Conflict Leisure /recreation	Biotechnology Cloning Nanotechnology Computers Information Processing Internet Communications Space Medicine Robotics Transportation	Natural resources Sustainability Climate Land Air Water Endangered Species Energy sources Pollution Eco-Activism Pesticide usage Food Carrying capacity	Business Trade Work Globalization Multinationals Collective Bargaining Taxes Currency Work Volunteerism	Governance Legislation Laws, rules and regulations Democracy Authoritarianism Privacy Advocacy



Questions for Extending the Learning Value of the Scanning Activity

What are the basic causes of the driving force, event or emerging issue?

Are the causes likely to continue?

What could happen to alter the trend or emerging issue (obviously, a discrete event has already occurred and can't be altered)?

Are there any countervailing driving forces, events or emerging issues? If so, list them.

Specify the positive and negative consequences of the driving force, event or emerging issue.

What could be done to enhance the effects of the driving force, event or emerging issue?

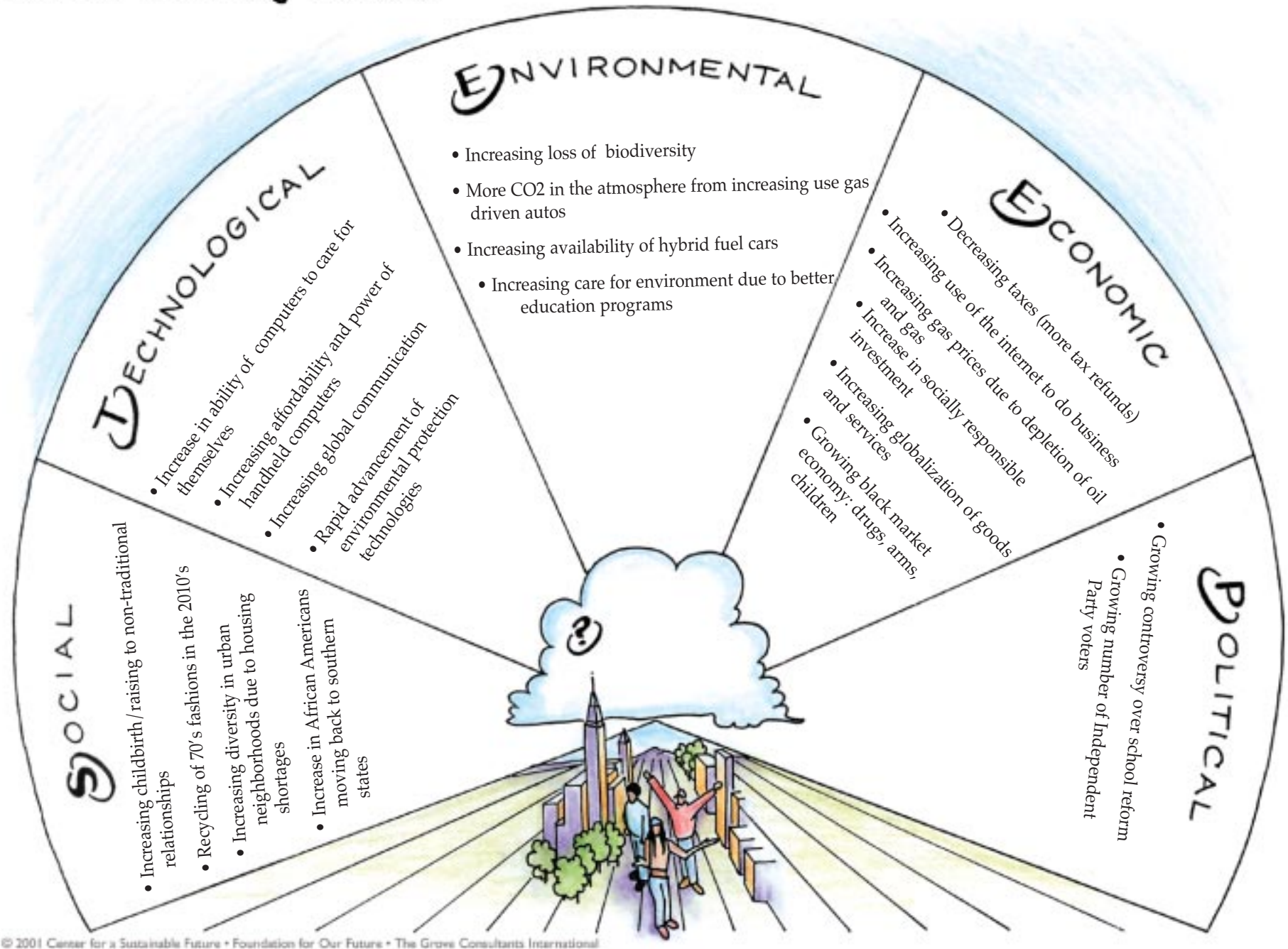
What could be done to lessen the effects of the driving force, event or emerging issue?

(Adapted from *Enhancing Thinking and Creativity with Futures Studies*, Charles E. Whaley, 1995)



STEEP Driving Forces

Example of Completed STEEP Summary Template



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5.2 Sort Driving Forces into Categories of Certain or Uncertain and Rank Their Relative Importance

Purpose: This activity is aimed at sorting the summary list of driving forces developed in the previous step into two categories: certain and uncertain. The uncertain driving forces will be used in the next step of the process to define the four scenario spaces about which students will explore and develop stories. The certain driving forces will also be used later on when students are developing their scenario stories. In this step students will also agree on what the most important certainties and uncertainties are.

Time needed: 45 minutes.

Materials needed: Wall-sized Summary STEEP Driving Forces Template from the previous step, Flipchart paper, Markers, Tape.

Learning Outcomes:

- ~ enhance our critical thinking skills through: analyzing and evaluating information, discerning relationships among data, and using opinions and beliefs to decide on the relative importance of data items.

Learning Objectives:

- ~ distinguish between fact and opinion;
- ~ synthesize data into categories of similarity and difference; and
- ~ make better generalizations and conclusions.

How To:

1. Tell students that they must decide if the driving forces on the summary list are likely to be certain or uncertain – in terms of how they will play out into the future.

Certain means that the driving force will be just as prominent and will exert the same level of force as it does today. For example, if “growing world population” was one of the driving forces on the list, would that be true over the next twenty years? (According to recent population studies, the world’s population will continue to grow over the next 30 to 50 years, so that would be a certainty).

Uncertain means that it is a driving force that could change and either be more or less prominent and have more or less force depending on how it changes. For example, if an uncertainty was “increasing budgets for military needs”, would that likely be true over the next twenty years? Looking at the past twenty years might show that the military budgets have gone up and down and so we would conclude that this driving force is uncertain.

Uncertainties seem to be harder to decide on than certainties. This judgement can be a bit arbitrary if we are short on data. But it is more important to reach consensus based on the previous work and research done than to be exactly right. What we decide together is the important result.

2. Deciding on certainties and uncertainties can be done as a whole group. Use the summary STEEP Driving Forces Template generated previously. Tell the students that they will vote for each driving force listed on the summary template – whether it is a certainty or an uncertainty. To reduce the number of items on the list, we may again want to review the driving forces summary template and ask if any of them can be consolidated into a single category.

I’m glad that I did this because it helped me realize the importance of teamwork. We had a chance to learn about each other. We had an opportunity to take the leadership roles and just kind of get out there and show a lot of people that we can do most of the things that adults can do.

~ Nittaya

3. Emphasize that this activity is to help define what the group sees as certain and uncertain and that there are no right or wrong answers. Also instruct the group that they should constantly refer to the Key Question as a reference for whether an item is more certain or uncertain. Allow some time for discussion of the list or the definition of certainty and uncertainty if needed.
4. Have each person write on the summary template next to each Driving Force whether they think the item is certain or uncertain using a common code (e.g., “C” for certain, “U” for uncertain, or use red colored sticky dots for certain, green for uncertain....)
5. After everyone has voted, tabulate the results. Certainties are those items that have a majority of “C” votes. Uncertainties are those with more “U” votes. Items that are a tie become uncertainties.
6. Choose the Five Most Important Certainties - On a newsprint paper write up the list of certainties. Do the same on a separate newsprint for the uncertainties. Now ask students to decide on the five most important certainties: which five they believe are the most critical with regard to the Key Question the group is exploring.

Tell each student to vote for his or her top five certainties. They cast five votes, one for each of their top five. They must cast one vote per item (i.e., they cannot put two or more votes on one item). After the voting is done tally up the results. The top five vote getters become the five most important certainties. Tie votes can be re-voted, or we can decide to include both in our list of most important certainties. We will use these certainties later on when we are developing our scenarios.

Note: If you have a larger group of students (thirty or more) you may want to limit the number of votes that each student casts to three – in order to keep the total number of votes to be counted to a manageable number. (You would still choose the top five vote-getters).

Important: Tell students that voting does not mean that the other questions are to be discarded and forgotten. They are important and valid and should also be kept in mind throughout the process. Keep the template up for future reference.

7. Choose the Five Most Important Uncertainties - Now focus on the list of uncertainties sorted by STEEP categories. In this step students will decide on the most important uncertainty (with regard to the group’s Key Question) in each of the STEEP categories. Use the same voting process as for deciding on the most important certainties. Have each student cast one vote for the most important uncertainty in each STEEP category. After the votes are placed, tally the results. The item in each category with the most votes is the most important uncertainty. Tie votes should be re-voted so that there is only one in each category.

We will use these top five STEEP uncertainties in the next activity to rank their relative degrees of uncertainty.

Note: Before voting on the uncertainties we may want to check them to be sure that the way they are worded does not suggest an outcome or a value. We will do that later.

For example, an uncertainty might be: “The degree to which people will embrace technology in their lives”. That’s a good description of an uncertainty. An example of how NOT to describe the uncertainty would be: “Whether people will reject technology”. The difference here is that in the first example the outcome is not implied in the way the uncertainty is stated. In the second example the wording suggests that the uncertainty can be answered by a yes or a no.

This may seem a bit subtle, but the distinction is important. One test that students could apply to their uncertainties is to ask if the uncertainty as stated could be answered with a “yes” or a “no”. If so, they should reword it so that the outcomes for the uncertainty are better described by adjectives or adverbs like “low” and “high”, or “centralized” and “decentralized” or “strong” and “weak” or “poor” and “excellent”.

... when you see different people’s viewpoints it tends to change your viewpoint also. I mean you might have a set mind that one thing can be only done one way but once you hear other people’s opinions and views you tend to think about it a little bit and your views do change.

~ Amit

5.3 Decide on the Two Most Uncertain Uncertainties

Purpose: In this step students will discuss and decide on the relative importance of the five uncertainties they chose in the previous step. These will become the two uncertainties they will use to define the four scenario spaces for their future stories. They will use these two uncertainties to create Future Wheels in the next step (if time permits they will do Future Wheels for the other three uncertainties as well).

The Gauging Uncertainty template is a tool to help students decide which two of the five uncertainties are most critical to the Key Question they are exploring. Students will use the worksheet to guide their dialogue in small groups about the relative uncertainty of the five most important uncertainties.



We all have ideas about the future, it's not the same future but where we go will be the same place

~ Seyde

Time Needed: 45 minutes.

Materials Needed: Wall-sized Gauging Uncertainty Templates (Appendix B) – one for each small group, markers, masking tape, flipchart paper or newsprint paper.

Learning outcomes:

- ~ discuss our different perceptions of where an uncertainty lies on a scale of 1 to 10;
- ~ develop skills in articulating our rationale for conclusions; and
- ~ strengthen our ability to reach consensus around complex issues.

Learning objectives:

- ~ communicate and collaborate with others in the problem solving process;
- ~ propose alternative solutions to problems; and
- ~ view problems and issues from multiple perspectives.

How To:

1. Explain to students that they will use the Gauging Uncertainty template in small groups to rank the level of uncertainty of the top five uncertainties. The groups will reconvene and share their results and a final consensus reached about the top two uncertainties.
2. Form three or four small groups and decide who will record, who will keep time, and who will present for the group. Give each group a template. Instruct each group to fill in each of the five spaces on the worksheet with the five most important uncertainties that they developed previously.
3. Explain that the students should review each of the uncertainties in their small groups and discuss how uncertain they think each is on a scale from 0 (least uncertain) to 10 (most uncertain). After discussion on each item, each student should vote on the degree of uncertainty for that item. Using the scale on the template each student should make a mark on the number they feel is representative of the degree of certainty for that item.

Students should then repeat this process for each of the other four items on the list.

4. Break out into small groups and rank the uncertainties.
5. Reassemble the small groups and have each group share the results of their rankings with the whole group. Compile the results on a piece of newsprint showing the top two vote getters for each group.

Uncertainty	Group 1	Group 2	Group 3	Group 4
Driving Force A	x	x	x	x
Driving Force B				
Driving Force C		x	x	x
Driving Force D	x			
Driving Force E				



Gauging Uncertainty Worksheet

?

What decisions can I make that will bring a better quality of life to me, my family, and my community in the next twenty years?

DEGREE OF UNCERTAINTY

	LOW UNCERTAINTY	HIGH UNCERTAINTY
<div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">)</div> <div>Quality of Healthcare</div> </div>		
<div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">)</div> <div>Global Warming</div> </div>		
<div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">)</div> <div>School Violence</div> </div>		
<div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">)</div> <div>Acceptance of Individuality</div> </div>		
<div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">)</div> <div>Size and Scope of Businesses</div> </div>		

Construct Future Wheels

Purpose: The Future Wheel helps students understand forces and factors that are interacting with each other to influence the future. It graphically depicts a range of possible consequences likely to flow from a particular driving force. Exploring the potential future consequences of driving forces enables students to organize and synthesize their thinking concerning the future. A Future Wheel illustrates cause and effect relationships between a driving force and the changes that could ripple out from it.

Time needed: 60 minutes If time is short, limit the brainstorming of each set of consequences. If more time is available, allow the activity to continue until all ideas are expressed. Put extra 1st, 2nd and 3rd order consequences in a consequences bank for possible future use in the scenarios.

Materials needed: Future Wheel Templates (see Appendix B), 4 different colors of post-it notes, markers, paper, pens.

Learning Outcomes:

- ~ synthesize a framework for comprehending the social and physical environment.
- ~ understand how apparently unrelated events are, in fact, connected and interdependent.

Learning Objectives:

- ~ analyze, interpret, and synthesize information obtained from multiple sources and communicate results in a unique way.

Future Wheel



How to:

1. Use the Future Wheel Template to create future wheels for your scenarios. Show students the template. Explain that the wheel has a center circle where the uncertain driving force is entered. Around that circle are three more circles called first order consequences. Moving outward from the first order circles, there are two circles connected to each first order circles. These are for second order consequences. And the outermost ring of circles, connected to each second order implication, are the third order consequences.
2. Tell the students that they will work in five small groups, one for each of the uncertain driving forces that they developed earlier. Ask each group to decide on a recorder, a timekeeper and on who will report the group's results to the larger group.

Each group will start with the most uncertain driving force in their STEEP category at the center with first, second, and third-order consequences radiating out from there. Show the example of a completed future wheel.

Explain that they should try to think about these consequences as cause and effects that ripple outward - like the rippling rings that flow across the water when a pebble is dropped. They should focus on causality and not on chronology. Causality means that there is a clear cause and effect

relationship between consequences. For example, increasing taxes on business → more money available for school funding. Chronology may not describe causality. It tells about when something happened and then something else happened after that which may not necessarily have been caused by the first event. For example, increasing taxes on business → fewer small businesses. A better way to state this would be: increasing taxes on business → small businesses lobby for tax breaks.

Suggestion: Use different color post-it notes for the uncertainty, the first order consequences, the second order consequences, and the third order consequences. This makes a total of 4 colors. Using post-its makes it easier for the group to change the content of each circle in the Future Wheel as their ideas evolve.

3. Tell students to start by writing the top uncertainty from the STEEP category on a post-it note and place it in the center circle of the Future Wheel Template. Brainstorm first order consequences by asking the group members to call out the immediate results that are likely to flow from the driving force. As they call out the first order consequences write them on post-it notes and place them on the Future Wheel Template.
4. Brainstorm second order consequences by asking students to call out immediate results that are likely to flow from the first order consequences on their Future Wheel. Write two second order consequences for each first order consequence on post-it notes and place them on the appropriate circles on the Future Wheel Template.
5. Repeat the procedure by writing one third-order consequence for each second order consequence on post-it notes and placing them on the appropriate circles.

I like math and math takes a lot of steps and process, and when we worked in teams like we did with the Future Wheel and the flowchart thing we're doing now it makes you go beyond just the surface and just go deeper into different situations like I like doing.

~ Shawn

Note: be sure that students are developing consequences that are well rounded. If it appears that the consequences are predominantly negative (as is often the case) or positive, we may want to apply the PMI technique to the items being brainstormed (see *Process Tools for Facilitators in Appendix A*).

6. Students should review the completed Future Wheel and discuss any final changes they think should be made before presenting to the whole group.

Reassemble the groups and have each group share their Future Wheels with each other. After each group presents have them place their completed template on the wall. Be sure each Wheel is labeled with the STEEP category it represents. Give students a few minutes to review the completed templates. They will use the Future Wheels to help develop the content of their four future scenarios in the next step.



Some questions we might pose to students to generate ideas for consequences.

How would the driving force affect:

- ~ what a person would aspire to?
- ~ what conflicts would be like?
- ~ what would peace be like?
- ~ how a person would view and express love?
- ~ how a person would view family?
- ~ how a person would view marriage?
- ~ how a person would view spirituality?
- ~ how people would communicate?
- ~ what people would value?



I've seen quite a few ah-ha's!... But I've also seen just a general maturing of the class and beginning to look at life in an adult sense. It's almost like I walked into the room with 23 teenagers yesterday morning and now I feel like we're dealing with 23 young adults.

~ Donna

...I think that this experience has helped me personally because when I think about other people that didn't have this experience they don't think like us, you know, now we're exposed and we know how to look at things a little differently.

~ Sophea

...as 18 year olds they're having to think about the future and I don't think that that's something they traditionally do in the sense that it's this organized, that there are people who have been trained to help students pull out of themselves what they think the future is. It looks like they're on track.

~ Sammy



Future Wheel

Example of Completed Future Wheel



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Develop Scenarios

Purpose: In this step we will use the two most important uncertainties that we chose in section 5.3 as the two axes of a matrix to form four scenario spaces. In these spaces we begin to define what the future in each of those scenarios could be like.

Time needed: 60 minutes.

Materials Needed: Wall-sized Four Futures Templates (Appendix B), paper, pens.

Learning Outcomes:

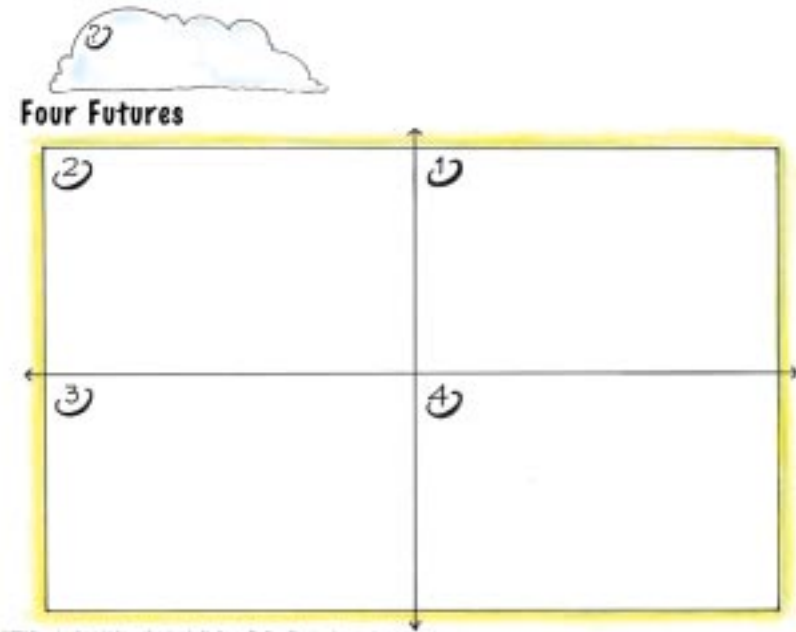
- ~ strengthen our ability to analyze and simplify a complex set of variables into interrelated components; and
- ~ improve our skills in working collaboratively to create a group product.

Learning Objectives:

- ~ identify consequences of the alternatives;
- ~ distinguish between fact and opinion;
- ~ make generalizations and draw conclusions; and
- ~ view problems or situations from multiple perspectives.

...we got to run with it and come up with our own ideas and come up with basically the whole project by ourselves. It makes me feel more independent, being able to work on a big project like this and being able to get it accomplished.

~ Wais



How To:

1. Explain to the students that they will be using the Four Futures Template to sketch out the four futures that they will explore and write stories about. This template is developed using the two most important uncertainties they decided on earlier.
2. Work with the whole group to decide how to label the horizontal and vertical axes of the Four Futures Template.

For example, let's say the two most important uncertainties we decided on were:

- a. how readily people accept technological changes and innovations; and
- b. whether big, global companies will dominate the business sector.

Label one of the axes with the first uncertainty, something like "acceptance of technology". Label the other axis with uncertainty, something like "corporate landscape". It's important here to avoid choosing words that describe a direction or value for those uncertainties. We will do that next. (see the discussion about wording the uncertainties in section 5.3).

3. Now that we have named the uncertainties, we need to decide how to label the extreme ends of each of the axes. The goal here is to come up with labels that describe what the group imagines the extreme but possible endpoints of the uncertainty could be.

Through discussion as a group we might decide that the two most extreme, and possible, ends of the acceptance of technology axis are: “quick to embrace” and “cautious scrutiny”. For the corporate landscape axis we might decide that the endpoints are “the big and the few” and, on the other end, “the small and many”.

By labeling the endpoints of our two axes of uncertainty, we have defined four scenarios of the future with respect to the question we are exploring. In our example, we would now have the following four scenarios of the future:

- i. a future when the businesses are big and few and people are quick to embrace technological innovations;
- ii. a future when businesses are small and many and people are quick to embrace technological innovations;
- iii. a future when the businesses are big and few and there is cautious scrutiny of technological innovations;
- iv. a future when businesses are small and many and there is cautious scrutiny of technological innovations.

I think it's been an eye opening experience. If nothing else they've spent two days realizing that we're all connected, whether we're talking about global warming and the decisions we make with that issue or if we're talking about violence in schools.

~ Donna

4. At this point, assign a group to work on each of the four scenarios. Each group will be responsible for exploring their scenario and developing stories that tell something about what life would be like if that future were to become real.

5. Advise students to review the Future Wheels and their lists of certainties and uncertainties for topics that they can include in their scenario. In their groups they will discuss what the positive and negative possibilities of their scenario could be. Emphasize that they should not assume that one scenario is more negative or positive than another. Each future has its own “good-bad-ugly” aspects. What will distinguish them is how students imagine the driving forces to play out in their future.

Option: If you think that students would benefit, you might want to do the Visioning Activity in the Appendix. It is designed to stimulate their imaginations and to get them more into a “future perspective”. We all have a strong tendency to recast the present in describing the future. Taking an imaginative leap forward ten, twenty, or more years is a challenge and the visioning activity may help. Note: If you choose to do the Visioning Activity, each scenario group should do their own visioning for their particular scenario.



6. Tell students to break into their small groups to do the following tasks:

- Revisit their Future Wheels and critical uncertainties and look for connections among the implications as they relate to their specific story quadrant; and

Somehow address the top 3 certainties (from the earlier list of certain driving forces) in their story quadrant; and

- Come up with a title for their future scenario.

Note: You might consider giving students some questions they can use to help explore their scenario (*see box for suggestions*).

7. After the groups have had enough time to complete their tasks, have them come back together to share the results of their efforts. See the example of a partially completed template below. As each group presents, use a blank Four Futures Template and write the contents of each group's scenario ideas and titles in each quadrant.

...when you think about the quality of life you know what you want and you know what direction you want to go in and you think about those decisions much more carefully and what direction you have to take and what kinds of decisions you have to make.

~ Knista



Questions students could explore about their future scenario:

- ~ How do the implications and uncertainties play out in your story quadrant?
- ~ Describe how your story gets from here to there.
- ~ What events took place to make the end points of your story plausible?
- ~ How would a hero succeed in your future? What would his journey look like?
- ~ How would the haves and have-nots handle the driving forces in your future?
- ~ What challenges would be present in your future?
- ~ What threats and opportunities would your characters face in your future?
- ~ If you were to live in this future what would a day in your life be like? Describe it.