

The survey is conducted online—this copy is for review purposes only.

Overview

This annual survey of the National Science Foundation's Advanced Technological Education program grantees is used to obtain information about the program's characteristics, activities, and impacts. The findings may be used by (1) NSF program staff to prepare their annual reports and make program decisions, (2) ATE grantees to help them gauge their performance in relation to the other grantees, and (3) researchers investigating issues related to technician education.

Some of the data collected from this survey will be shared in selected ways to further ATE collaboration and research efforts. We encourage you to review the Confidentiality section of the Survey FAQs at www.evaluate.org/annual_survey for details about data protections and uses.

The survey period is February 18–March 31, 2013. We recommend that you review this document in its entirety before responding to the online version so that you will have all the necessary information at hand to answer the questions. The survey is Web-based; access information will be e-mailed to principal investigators at the start of the survey period.

Additional information about the survey is available at www.evaluate.org/annual_survey. Questions should be directed to Corey Smith at (269) 387-5895 or corey.d.smith@wmich.edu.

Thank you for participating in this survey.

General Instructions

1. Your responses should address the calendar year: **January 1–December 31, 2012**.
2. Section 1 is required for all respondents, including grantees in their first year. This section is about grantee characteristics, organizational practices, evaluation, and collaboration.
3. Sections 2-4 are about materials development, professional development, and program improvement, respectively. At the start of each of these sections, you are asked to indicate whether your grant activities in that area met a certain threshold (i.e., if in the target year you allocated EITHER 30 percent or more of your project/center's direct costs OR at least \$100,000 to the activity in question) or whether you do not meet the threshold, but want to report on that aspect of your work anyway.
4. Section 5 includes questions that are being asked on a one-time or rotational basis. We ask that all respondents complete this brief section.

Section 1: Grantee Characteristics and Practices

1. Award category:
 - Project
 - Center
 - Targeted research
 - Small grants for colleges new to the ATE program

2. Begin date for current award: _____ / _____ / _____ (MM/DD/YYYY)

3. End date for current award: _____ / _____ / _____ (MM/DD/YYYY)

4. Which of the following is the grantee institution?
 - 4-year college/university
 - 2-year college or 2-year college system
 - K-12 school or school system
 - Nonprofit organization
 - Association/society
 - Other (describe): _____

5. Your office address: _____

6. Phone: (_____) _____ - _____

7. Project/center Web site: http:// _____

8.
 - a. Total funds awarded in the current grant for this project/center: \$ _____
 - b. Annual budget for 2012: \$ _____
 - c. Estimate the percentage of your annual budget (8b), including salaries, allocated to the following activities. Percentages should total 100.
 - _____ % Materials development for national dissemination
 - _____ % Professional development including teacher preparation
 - _____ % Program improvement
 - _____ % Targeted research
 - _____ % Evaluation (internal and external)
 - _____ % Advisory committees
 - _____ % Institutional indirect costs
 - _____ % Other (specify): _____
 - 100 % Total 2012 project/center costs

9. What percentage of the annual budget (8b) was targeted to serve individuals at each type of institution? Estimate to the nearest 10 percent. Percentages should total 100.

_____ % 4-year college/university

_____ % 2-year college

_____ % Association/society

_____ % Secondary school

_____ % Business/industry

_____ % Other (specify): _____

100 % Total

10. Choose one of the following options to describe the major emphasis of your project/center.

Advanced Manufacturing Technologies

- Automotive manufacturing
- General manufacturing
- Additive manufacturing

Agricultural and Environmental Technologies

- Agricultural and natural resources
- Energy production
- Energy use (or conservation)

Biotechnology and Chemical Processes

- Biotechnology
- Chemical processes

Engineering Technologies

- Optics
- Electronics and controls
- Marine technologies
- Space technologies

Information, Geospatial, and Security Technologies

- Information and communications technologies
- Geospatial technologies
- Security, information assurance and forensics

Learning, Evaluation, and Research

- Evaluation
- Research
- Learning

Micro and Nanotechnologies

- Micro and nanotechnologies

Recruitment

- From underrepresented groups
- Into specific programs

Core Courses

- Core courses

Technology Teacher Preparation

- Technology teacher preparation

Other

- Other (specify): _____

ATE-Supported Instruction

Respond to questions 11-14 if your project/center supported the provision of science, technology, engineering, or mathematics instruction in 2012.

If you conducted contract training, report the numbers for those students separately. Do not include contract training numbers in the education-level figures.

	Education Level of Participating Students				Contract Training
	Secondary	Associate	Baccalaureate	Post Baccalaureate	
11. Total number of locations where the ATE-supported programs were offered					
12. Total number of individual students who took at least 1 course in 1 of your ATE-supported programs (if a student took more than 1 course, count that person only once)					

13. Based on the total number of students reported in **Question 12**, indicate the number of students in each of the following demographic categories.

	Education Level of Participating Students				Contract Training
	Secondary	Associate	Baccalaureate	Post Baccalaureate	
a. Male					
b. Female					
c. Hispanic/Latino					
d. American Indian or Alaska Native					
e. Asian					
f. Black or African American					
g. Native Hawaiian or other Pacific Islander					
h. Multiracial					
i. White Non-Hispanic/Latino					
j. Students requesting accommodation under the Americans with Disabilities Act					

Respond to Question 14 only if your ATE grant supported a *degree or certification program in 2012*.

14. Indicate the number of students across all of your **ATE-funded degree or certification programs** who met the following conditions in 2012.

Student Status	Education Level of Students			
	Secondary	Associate	Baccalaureate	Post Baccalaureate
a. Completed the specified program				
b. Left the program prior to completion and is not expected to return to complete (e.g., dropped out, changed majors)				
c. Students remaining in the program (i.e., did not complete or leave the program in 2012).				

Articulation Agreements

Articulation agreements are defined as specific agreements between two or more institutions that allow students who complete an education program or series of courses to matriculate to a higher level of education at specified institutions.

Matriculation may occur in a sequential or concurrent fashion. Sequential matriculation occurs when a student completes the program at the lower level and then begins taking courses at the higher level institution. Concurrent matriculation occurs when the student is enrolled simultaneously at both institutions.

15. Was developing articulation agreements ever part of your project/center activities?

- Yes
 No (If NO, please skip to Question 17)

16. Report the number of articulation agreements, institutions, and students associated with each education level.

	Education Level	
	High school to 2-year college	2-year college to 4-year college
a. Total number of articulation agreements <u>developed</u> in 2012		
b. Total number of articulation agreements <u>in place</u> in 2012 (sequential and concurrent)		
c. Number of <u>institutions</u> involved in all the agreements		
d. Number of <u>students</u> that matriculated in 2012 (enrolled at the higher education level under the terms of an articulation agreement)		

Evaluation

17. Do you have a current, written evaluation plan for your project/center?

- Yes
 No

18. If you have *any information* related to the evaluation of your grant online (e.g., plans, instruments, reports), please provide the URL where they can be located:

http:// _____

19. Select the type of evaluator(s) used by your project/center (check all that apply).
- We do not have an evaluator, either internal or external
 - Evaluator **external to project/center and institution** (i.e., hired specifically to evaluate this grant)
 - Evaluator **external to project/center, but internal to institution** (i.e., hired specifically to evaluate this grant)
 - Internal evaluator (i.e., is a member of your staff)

a. Please provide the name of your evaluator and her/his organizational affiliation (e.g., John Smith, Western Michigna University).

20. What type of report did you receive from your evaluator in 2012? (check all that apply)

- Written
- Oral
- None (If NONE, skip to Question 22)

21. How has your project/center used the information provided in the report(s)? (check all that apply)

- To make changes in our activities
- To make changes in our goals
- To make changes in our evaluation strategies
- For marketing our work
- To gauge impact
- To inform stakeholders (e.g., partners, industry, advisory board, NSF)

Answer Question 22 only if you indicated use of an *external* evaluator in Question 19.

22. How frequently did your external evaluator interact with your staff (e.g., e-mail, teleconferences, face-to-face) in 2012?

- Rarely (annually or semiannually)
- Infrequently (not every month but at least quarterly)
- Occasionally (more often than quarterly and as much as monthly)
- Often (more often than monthly and as much as biweekly)
- Continually (very nearly weekly, weekly, or more often)

Collaboration

Collaboration is a relationship with another institution, business, or group that provides money or other support to your project or center. Collaborators are not funded by the grant.

23. For each type of collaborating organization listed below, report the number of different organizations you collaborated with in 2012.

_____ Business/industry

_____ Within your host institution (e.g., other department or administrative unit)

_____ Other education institutions

_____ Public agencies (e.g., government agencies)

_____ Other ATE projects/centers

_____ Other (specify): _____

24. Report the total dollar value of monetary and in-kind support received by your project/center from all sources other than your ATE award in 2012 (round to the nearest thousand dollars).

a. Monetary support \$ _____

b. In-kind support \$ _____

25. For each type of collaborating organization listed below, check up to two options that best describe the main benefits to your project/center in 2012. *Each column should not have more than two checked benefits.*

Type of Benefit	Type of Collaborating Organization				
	Business/ Industry	Within Your Host Institution	Other Education Institution	Public Agency	Other ATE Grantee
a. General support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Financial or in-kind support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Developing program content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Facilitating service delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Access to decision makers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Information about workforce needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Developing articulation agreements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Student support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 2: Materials Development

This section of the survey focuses strictly on materials developed for national dissemination to serve instructional purposes (it does not include project/center promotional materials).

All respondents are asked to complete at least the first question in this section—a determiner of who should complete the full section.

1. Did your project/center allocate at least 30 percent of its direct costs **OR** at least \$100,000 to instructional materials development in 2012?
 - Yes (Complete this section)
 - No, BUT we consider it a significant area of our activity, and we want to report our work. (Complete this section)
 - No (You are now finished with this section)

Materials addressed here are the media (textbooks, laboratory experiments and manuals, software, online materials, CD-ROMs, videos, or other courseware) used to convey the content and instruction of activities, modules, and courses.

DEFINITIONS

Course: A stand-alone collection of instructional content and activities to achieve desired educational outcomes. Courses usually last a semester or a year.

Module: A self-contained collection of content and activities designed to achieve a set of specific objectives. Modules are generally shorter than courses and focus on fewer outcomes.

Activity: An activity is an instructional exercise—for example, a laboratory experiment—designed to achieve a discrete learning outcome or a test to measure achievement or progress toward that outcome.

What is of interest here is the number of **discrete** activities, modules, and courses that your project/center developed in 2012. Do **not** count an activity if it was included as part of a module or course you are reporting on. Similarly, do not count a module separately if it is part of a course that you are reporting on.

2. For each type of material listed below, report the number of materials that were in draft or field-test stage, completed, or published in 2012.

Development Stage	Type of Material		
	Course	Module	Activity
a. In draft or field-test stage			
b. Completed (<i>If your answer is 0 for each of these three cells, skip to Question 5</i>)			
c. Published commercially			

3. For the materials you reported as complete in **Question 2b**, report the number that are being used at various locations. A single course, module, or activity might be reported in multiple rows.

Location	Type of Material		
	Course	Module	Activity
a. Number in use locally (at your institution/organization)			
b. Number in use at institutions/organizations that partnered with your project/center in the development effort			
c. Number in use elsewhere (i.e., at nonpartner institutions/organizations)			

4. For the materials you reported as complete in **Question 2b**, report the number of institutions/organizations, other than your own, that are using **at least one** of them. _____

5. For all materials you reported in **Questions 2a & 2b**, report the number directed at each type of audience.

Target Audience	Type of Material		
	Course	Module	Activity
a. Secondary school			
b. 2-year college			
c. 4-year college			
d. Business/industry training or education program			
e. Other (specify):			

Section 3: Professional Development

This section addresses professional development provided to secondary school teachers, college faculty, and preservice teachers to enhance their disciplinary capabilities, teaching skills, understanding of current technologies and practices, and 21st century skills in ways that will directly impact technician education.

All respondents are asked to complete at least the first question in this section—a determiner of who should complete the full section.

1. Did your project/center allocate at least 30 percent of its direct costs **OR** at least \$100,000 to professional development in 2012?
 - Yes (Complete this section)
 - No, BUT we consider it a significant area of our activity, and we want to report our work. (Complete this section)
 - No (You are now finished with this section)

Questions 2 and 3 ask about the number of different types of professional development activities offered by your project/center and the number of participants in those activities. If your project/center did not offer the activity in question, put a zero (0) in the space provided.

DEFINITIONS

Intact classroom: Participants and instructors worked together in the same physical setting.

Distance education: Activities conducted primarily online or with online support.

Follow-up: Activities to support implementation after the initial professional development activity.

2. Report the number of professional development activities offered by your project/center in 2012 and their characteristics.

Type of Professional Development Activity	Total Number of Activities Offered	Number Offered in Intact Classroom Settings	Number Offered Using Distance Education Techniques	Number Offered With Follow-Up Support
a. Short presentations to raise awareness				
b. Instructional activities of less than a day (e.g., lecture, training session)				
c. Instructional activities that last one day or more, but less than one week (e.g., workshop, online module)				

Type of Professional Development Activity	Total Number of Activities Offered	Number Offered in Intact Classroom Settings	Number Offered Using Distance Education Techniques	Number Offered With Follow-Up Support
d. Instructional activities that last from one to several weeks (e.g., course, summer institute)				
e. A long-term periodic instructional activity (e.g., internship, peer coaching)				

3. Report the number of participants in your project/center's 2012 professional development activities.

Type of Professional Development Activity	Total Number of Participants	Number of Participants in Intact Classroom Settings	Number of Participants in Distance Education Settings	Number of Participants Who Received Follow-Up Support
a. Short presentations to raise awareness				
b. Instructional activities of less than a day (e.g., lecture, training session)				
c. Instructional activities that last one day or more, but less than one week (e.g., workshop, online module)				
d. Instructional activities that last from one to several weeks (e.g., course, summer institute)				
e. A long-term periodic instructional activity (e.g., internship, peer coaching)				

4. Report the number of participants in your 2012 professional development activities that are associated with each education level.

Professional Development Activity	Total Number of Participants			
	Secondary Level	Associate Level	Baccalaureate Level	Other
a. Short presentations to raise awareness				
b. Instructional activities of less than a day (e.g., lecture, training session)				
c. Instructional activities that last one day or more, but less than one week (e.g., workshop, online module)				
d. Instructional activities that last from one to several weeks (e.g., course, summer institute)				
e. A long-term periodic instructional activity (e.g., internship, peer coaching)				

5. What percentage of participants implemented new materials or ideas after attending your professional development activities? Your estimates should be based on data your project/center collected. *If you did not collect data for an activity, enter NA.*

Type of Professional Development Activity	% of participants who implemented one or more of the new materials or ideas
a. Short presentations to provide awareness	_____ %
b. Instructional activities of less than one day (e.g., a lecture, training session)	_____ %
c. Instructional activities that last one day or more, but less than one week (e.g., workshop, online module)	_____ %
d. Instructional activities that last from one to several weeks (e.g., a course, summer institute, etc.)	_____ %
e. A long-term periodic instructional activity (e.g., internship, peer coaching)	_____ %

Section 4: Program Improvement

This section addresses the development or improvement of technician education programs for secondary students, college students, or persons employed as technicians.

All respondents are asked to complete at least the first question in this section—a determiner of who should complete the full section.

DEFINITION

Program: A sequence of classes, laboratories, and/or work-based experiences that lead students to a degree, certification, or an occupational competency point.

1. Did your project/center allocate at least 30 percent of its direct costs **OR** at least \$100,000 to program improvement in 2012?
 - Yes (Complete this section)
 - No, BUT we consider it a significant area of our activity, and we want to report our work. (Complete this section)
 - No (You are now finished with this section)

2. Report the number of programs and courses for each education level and on-the-job training included in your program improvement work in 2012.

If you conducted contract training, report the numbers for those students separately. Do not include contract training numbers in the education-level figures.

	Education Level				On-the-Job Training/ Contract Training
	Secondary	Associate	Baccalaureate	Post Baccalaureate	
a. Total number of programs supported by your ATE grant in 2012					
b. Total number of ATE grant-funded programs <u>developed or modified in 2012</u>					
c. Total number of separate courses <u>developed or modified in 2012</u> with ATE support (if a course appears in more than one program, count it only once)					

Section 5: Special Topics

This section addresses research and emerging topics of interest to NSF program officers, ATE researchers, and other ATE projects/centers. Questions in this section are intended to be included for a limited time and/or on a rotational basis. All respondents are asked to complete this section. Skip any questions that are not applicable to your context.

Note: If you are interested in submitting a question to be included on the 2014 ATE survey, please contact EvaluATE prior to December 1, 2013 and we will provide you with criteria and guidelines for ATE Special Topics survey questions. Questions may serve research or needs assessment purposes. Email lori.wingate@wmich.edu.org.

Recruitment and Retention of Underrepresented Groups in STEM

- Demographic groups of special interest to NSF include underrepresented minorities (Hispanic/Latino, American Indian or Alaska Native, Black or African American, Native Hawaiian or other Pacific Islander, and multiracial individuals), people with disabilities, women, and veterans.

Does your project/center target specifically target any of these groups in recruitment or retention?

- Yes
- No (if no, skip to the next topic)

- Please identify the groups which you targeted in 2012

- Underrepresented Minorities
- People with Disabilities
- Women
- Veterans

- Indicate which of the following strategies you employed to recruit and support the group(s) you specifically targeted in 2012. Check all that apply

Strategies (to reach target group)	Demographic Group			
	Underrepresented Minorities	People with Disabilities	Women	Veterans
a) Advertise in places likely to reach target group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Show diversity in advertising materials (e.g., language, images)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

c) Recruit in settings likely to reach target group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Engage enrolled students from target group in recruitment activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Partner with organizations that specifically serve the target population	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Offer financial support especially for target group (eg. Scholarships, grants, work study)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Conduct outreach activities especially for target group (e.g., camps, field trips, conferences, summer bridge programs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Provide mentoring especially for students from target group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Provide tutoring especially for students from target group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Provide support groups especially for students from target group (e.g., learning communities)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. If you are targeting specific underrepresented minorities please indicate which ones:

- Black or African American
- Hispanic/Latino
- American Indian or Alaska Native
- Native Hawaiian or other Pacific Islander
- Other _____

5. In your opinion, how successful were the targeted recruitment and support activities you indicated using in the previous question?

Strategies	Negative impact	No impact	Small positive impact	Medium positive impact	Large positive impact	Don't know
a) Advertise in places likely to reach target group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Show diversity in advertising materials (e.g., language, images)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Recruit in settings likely to reach target group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d) Engage enrolled students from target group in recruitment activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Partner with organizations that specifically serve the target population	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Offer financial support especially for target group (eg. Scholarships, grants, work study)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Conduct outreach activities especially for target group (e.g., camps, field trips, conferences, summer bridge programs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Provide mentoring especially for students from target group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Provide tutoring especially for students from target group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Provide support groups especially for students from target group (e.g., learning communities)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

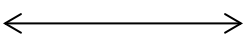
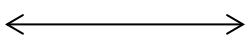
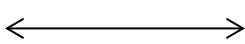
Business/Industry Involvement

The following questions address business/industry involvement in curriculum and program matters. If this topic does not apply to your work, you may skip question six and seven.

6. Please use the check box to indicate which of the following activities your project/center is engaged in. Use the slider to indicate how integral the activity is to your project/center .

Activity	We do this	Not integral to our work	←————→	Highly integral to our work
a) Working with business/industry to provide internships or other learning experiences for our students	<input type="checkbox"/>	Not integral to our work	←————→	Highly integral to our work
b) Engaging business/industry professionals as mentors for students	<input type="checkbox"/>	Not integral to our work	←————→	Highly integral to our work
c) Obtaining real-world problems from business/industry for problem-based learning activities	<input type="checkbox"/>	Not integral to our work	←————→	Highly integral to our work

7. Please use the check box to indicate which of the following activities your project/center is engaged in. Use the slider bar to indicate the level of influence business/industry has on these activities.

Activity	We do this			
a) Determining what the most important knowledge, skills and/or abilities are for graduates entering the workforce	<input type="checkbox"/>	Business & industry is not influential		Business & industry is very influential
b) Ensuring our curriculum aligns with the most important knowledge, skills and/or abilities, demanded by employers	<input type="checkbox"/>	Business & industry is not influential		Business & industry is very influential
c) Validating the content of the learning materials we develop	<input type="checkbox"/>	Business & industry is not influential		Business & industry is very influential

8. If your project worked with business and industry to validate the content of any learning materials you developed, what specific materials were reviewed by business/industry representatives (e.g., activities, modules, videos, cases, simulations)?

1. _____
2. _____
3. _____
4. _____
5. _____