



Title of Report: English Language and Non-proliferation Training Program

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1. Identify and describe the training program.

The English Language and Nonproliferation (ELAN) Program is typically an eight-week, 240-hour intensive immersive English language program for content areas in nonproliferation of weapons of mass destruction (nuclear, biological, and chemical). These areas include English for export controls, English for biosafety and biosecurity, English for nuclear safeguards and security, and so on. The program offers other delivery models in addition to the immersive program (see below).

The ELAN program is offered through the Education Program of the James Martin Center for Nonproliferation Studies (CNS), a research center within the Monterey Institute of International Studies. The center is devoted to combating the spread of weapons of mass destruction by training the next generation of nonproliferation specialists and disseminating timely information and analysis.

The ELAN program is divided into three courses: (1) English for nonproliferation content, (2) English for professional purposes, and (3) speaking, listening and culture. These courses are tailored to meet the needs of each professional target group. An additional skills-based course is added when necessary for groups with mixed proficiency levels or other special needs.

There is typically one teacher for each of the three courses. The ELAN project manager, who has a master's degree in TESOL as well as a background in nonproliferation issues and scientific content, teaches the nonproliferation content-based course. Teachers for the other two courses and the skills course are MA graduates in TESOL or second-year students in the MATESOL program at the Monterey Institute. They have previous experience in teaching ESL or EFL and are trained in and committed to a content-based approach to teaching English.

The ELAN program also recently developed and conducted a team-teacher training course in English for Nuclear Security for teams composed of EFL teachers and nuclear scientists from a Russian polytechnic university. This was a professional development course in the curricular and pedagogical implications of content-based instruction. It included the unique

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feature of cross-disciplinary pairings of content experts with English language faculty members in the development of model nonproliferation-content lessons. These team-taught lessons delivered nuclear security topics, from verification of international treaties and agreements and nuclear warhead dismantling to illicit trafficking and terrorism. These sessions used relevant authentic materials and interactive tasks to facilitate content mastery and enhance language acquisition.

In addition, these model lessons provided a valuable basis for the subsequent extended workshop on the principles and practices of content-based instruction. In that workshop, the teams of Russian content experts and EFL teachers developed their own curriculum frameworks, lesson objectives and plans, and evaluation and assessment tools for topics related to nuclear security. These topics included proliferation-sensitive aspects of nuclear materials, the nuclear fuel cycle, and reactor design. The lessons incorporated aspects of nuclear physics and materials protection and control. The workshop also included continued attention to honing English language skills, training in effective team-teaching, and exploration of learning processes, all intended to provide a train-the-trainers strategy for further content-based English language instruction initiatives at the university.

2. Describe the target audience for the training programs.

Trainees are professionals in nuclear, biomedical, and chemical (NBC) industries, government ministries, and agencies that seek to control these industries, as well as educational institutions that train future professionals. These individuals are identified and supported by the US Department of Energy or the US State Department. Some are supported with funds from Cooperative Threat Reduction programs, because they are either (1) former weapons scientists in the Soviet-era NBC complex; (2) current scientists in these former weapons sites working on dismantling the weapons and securing potential weapons materials or on peaceful uses of NBC technologies and materials (e.g., vaccine development); or (3) officials working in the control of these materials and technologies. Trainees have been from Russia, Georgia, Ukraine, Kazakhstan, Uzbekistan, Lithuania, Azerbaijan, South Korea, and Thailand. It is likely that the program will expand into other geographical areas as these technologies develop throughout the world.

Nuclear industry professionals work in the areas of border control, export controls, physical protection of nuclear facilities, and nuclear security. They are either nuclear scientists and engineers conducting research in nuclear technologies or officials working to control nuclear materials and technologies. They may also be involved in cooperative programs with US institutions in projects such as repatriating highly enriched (bomb-grade) uranium to Russia, downblending highly enriched uranium to low-enriched uranium suitable for nuclear power generation, and researching medical applications for radioisotopes.

Biomedical professionals are researchers in infectious diseases and vaccine development,



epidemiologists, and laboratory safety and security specialists. In that capacity they may be working with indigenous diseases (anthrax, brucellosis, etc.) that fall into Centers for Disease Control Category A & B diseases. Diseases in these categories are potential materials for biological weapons and require international normative procedures in safety and security. In addition, many of the biomedical researchers are in cooperative research programs with US institutions, such as the National Institutes of Health. These researchers need English language development to work effectively in these projects. People in this category also include those who are involved in the dismantling of Soviet-era biological weapons facilities and converting them to commercially viable businesses.

Professionals in the chemical industries include those working on chemicals for agricultural purposes, as well as people converting former chemical weapons facilities to commercial enterprises. There are also scientists involved in human health problems associated with dismantling Soviet-era chemical weapons.

3. Describe the needs assessment procedures utilized to develop the program.

The needs assessment for developing program objectives takes place in initial conversations with participants' sponsors on their goals for the program. Sponsors' goals are typically (1) increased English language competence, and (2) increased awareness of nonproliferation norms and conventions. Language competence serves the functional objectives of communication among US and international partners in cooperative projects and meetings, speaking at international conferences on research projects, transparency, and sharing information. Nonproliferation awareness serves the objectives of establishing and complying with international standards for safe laboratory practices, threat assessment, and security measures.

Once participants begin the program, a course-level needs assessment is conducted to identify more specific needs of the group. These needs vary with participants' job descriptions, past experience in and knowledge of nonproliferation issues, the proliferation sensitivity of their work, the cultural milieu in which their research takes place, etc. Together with a program-designed diagnostic test of English language proficiency and knowledge related to course content, the needs assessment informs the design of a curriculum tailored to each group and each individual in the group.

4. Explain the English language training program's over-arching goals and specific objectives.

The over-arching goals are increased English language competence and increased awareness of nonproliferation norms and conventions. These goals can be further delineated as follows:



- Enable and enhance communication with English-speaking colleagues on cooperative research projects.
- Improve reading and comprehension skills for understanding written communication and professional publications.
- Expand participants' knowledge of proliferation threats, nonproliferation efforts, the role of safety and security in nonproliferation, codes of conduct, and their personal responsibility in ensuring the security of proliferation-sensitive materials, pathogens, equipment, facilities, and other resources.
- Develop a community of specialists in nonproliferation and codes of conduct in facilities around the world.
- Cultivate long-term personal and professional relationships for continued cooperation in nonproliferation and public health efforts.
- Establish a model for cross-cultural communication and understanding in the context of communities of practice in safety and security.

Specific objectives are to develop English language competency in casual conversation, professional activities, and professional content knowledge. The development of cross-cultural awareness and competence in casual and professional contexts is also important, as is the development of nonproliferation competence for participation in an international network of nonproliferation specialists.

Speaking and listening foci include everyday conversation skills, speaking and listening fluency, and formal presentation skills, including understanding and answering questions. Other key goals are the understanding and appropriate use of terminology and concepts in professional contexts, the understanding and appropriate use of speech acts, and the understanding of cross-cultural issues and appropriate cultural choices in speaking.

Reading and writing objectives are that participants will read and understand authentic materials in nonproliferation and scientific sources, understand and write formal and informal emails, and summarize and comment on readings with professional and scientific content. They should also be able to write about their research and their institution, understand structural forms in scientific literature, and use correct structures for sentences, paragraphs, and essays. For example, the participants should be able to do the following:

- Make presentations in English at mock international conferences



- Be able to negotiate meetings with English-speaking colleagues and visitors to their facilities without interpreters
- Improve their written communications in reports and emails
- Improve their translation skills for information sharing
- Understand and absorb more information at international conferences
- Contribute to transparency in cooperative programs between their facilities and US entities
- Increase cultural awareness to improve relationships and communication in cooperative projects.

5. Describe the teaching methods and training procedures used in the program.

The ELAN program uses a content-based instruction approach to training. The nonproliferation content-oriented program fuses an instructional framework of science, safeguards, and security issues with language acquisition and skills development to create a system of language and content mastery for nonproliferation contexts.

Key to content-based instruction is contextualizing the learning process in real-world social, political, and professional materials and activities. For example, participants engage in discussions and conference-style colloquia based on readings in journals and other authentic sources on nonproliferation issues. They also review and evaluate real scientific papers and host an electronic poster session of their own research for CNS staff members. In the process, they develop and enhance their listening, speaking, reading, writing, and presentation skills, as well as their ability to answer challenging questions from both policy analysts and in-house scientists about their work.

6. Describe the teaching materials used in the program.

A wide range of authentic materials are used in this program. These include the following:

- Nonproliferation treaties and conventions
- Applied research reports in physical protection, risk assessment, safety and security
- Safety manuals such as the Centers for Disease Control's *Biosafety in Microbiological and Biomedical Laboratories*, the World Health Organization's *Laboratory Biosafety Manual*, and *The Laboratory Biosafety Guidelines*, published by the Minister of Health,



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Canada

- Professional instructional DVDs and videos
- Government and international organization reports
- Industry reports, glossaries, and educational materials

7. Explain the content of the English language training program.

A. What written and spoken genres are covered in the training program?

Participants work with a wide range of written and spoken genres: industry and government safety manuals; industry, government and NGO reports on security issues; proposals; emails; individual professional conference presentations; electronic poster sessions; panel presentations; negotiations; scientific papers; treaties and conventions; journal and newspaper articles; television news; and industry educational videos and DVDs.

B. What communicative functions are covered in the training program?

The communicative functions needed by the participants include negotiating; greeting and information sharing; making, granting, and refusing requests; agreeing and disagreeing; proposing ideas; questioning subordinates and authorities; communicating about procedures; asking questions of lecturers; and answering and making queries.

C. What speech events are covered in the training program?

The speech events for which the program prepares the participants are meetings with US and international partners and sponsors; video, phone, and face-to-face meetings; giving and listening to conference presentations; other speech events include social events, dinners, and toasts and meetings with and inspections by international organizations.

8. Explain the delivery mechanisms employed by the program.

The eight-week intensive immersion course takes place in a face-to-face classroom setting. There are approximately five to seven participants in the classes. Participants also use self-access materials and computers. Depending on the proficiency levels of the members of the group, individual or small group instruction may be provided for skills building, in addition to the regular curriculum.

ELAN instructors also travel to sites for in-country face-to-face training, which vary in



length and intensity. These sessions allow participants to maintain working hours and/or responsibilities while receiving training.

Online courses are also possible. They vary in length, from a few weeks to a full semester. The instructor ideally will make a short visit to the site to conduct needs assessments, diagnostic testing, and learner training before the online session begins. Online technologies change as technology evolves; current online courses include a course website as a content management system for multi-media materials collection and delivery, and a Skype or other video connection. Technology design for course and lecture delivery depends on the technologies available at the receiving end.

9. Explain the assessment procedures used in the program.

Proprietary pre- and post-course tests have been designed specifically for the program. Assessment includes results of these tests, as well as teacher observation, an oral proficiency exam, and performance in the final mock conference presentation.

10. Explain the program evaluation mechanisms used.

Participants fill out evaluation forms, which are used in evaluating both the teachers and the program overall. Informal feedback from program sponsors who meet with participants after the program also factors into the program evaluation process. Participants' performance in assessment procedures is another source of program evaluation data.

11. Discuss the challenges involved in offering this English training program.

The biggest challenge is consistent funding from program sponsors. The target audience in nonproliferation is limited and under-funded.

Another challenge is not having input into the selection process. Consequently, groups of participants have varying levels of English language proficiency and sometimes varied professional backgrounds. The program adjusts as needed.

A diagnostic test was developed to help program sponsors screen applicants for language proficiency, but this factor is not the sponsors' highest priority. Criteria for selection often have little to do with language proficiency.

12. Describe the successes of the program and explain how they are documented.

Pre- and post-course assessments have shown consistent increases in language proficiency—sometimes increases of two levels (on the scales of the ALTE: Association of Language Testers in Europe and ACTFL: American Council on the Teaching of Foreign



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Languages). In addition, reports from sponsors who meet with the participants after the program report observable if not dramatic improvements in language proficiency. Also, the participants themselves report their increased ability to meet with US partners without the need for interpreters and successes in making “best-ever” English-language presentations at professional conferences. Finally, the participants are often promoted in their jobs, or their overall careers are enhanced, due to both their language proficiency and their training in nonproliferation norms and conventions.

Since 2001, government officials, industry representatives, and nongovernmental analysts have voiced the need for focused and effective steps to prevent the misuse of science, medicine, and new technologies. Most of them recognize that while centralized action at the national level to promote safety and security is of highest priority, it is also important to simultaneously develop and implement consistent international safety and security standards and measures. The ELAN program contributes to the dissemination and development of these standards and measures.

CNS and the ELAN staff have a record of being very responsive to sponsors’ requests and regional interests. The ELAN program is not regionally specific and can be adapted to participants’ needs in any area of the world. In addition to the unique set of training options developed by ELAN, the program offers expertise in nonproliferation and public health issues by a staff of more than forty specialists in its five research programs, providing a rich learning experience for all students.

The concrete and observable return on investment for the sponsors is their ability to communicate directly with trainees—scientists and other professionals in countries that have partnerships with the US in weapons dismantlement or disease research, for example. Furthermore, US sponsors see that the participants absorb more information from English language conferences and also have more opportunity to present and do a better job of presenting their work. Such communication enhances knowledge exchange and information sharing, as well as transparency between the countries involved. The development of a network of English-speaking nonproliferation specialists who pass on their knowledge in their own workplaces is yet another documented benefit of the program.