

January 14, 2014

To: ARRL Board of Directors

From: Debra Johnson, K1DMJ, ARRL Education Services Manager

RE: Board motion requesting investigation of shorter duration formats for Technician license instruction and costs to develop materials to support these formats[[1]](#footnote-1)

**Conclusions and Recommended Actions** can be found on the last page of this report.

**Background Study**

I pursued a couple of approaches in response to the Board’s request to investigate alternative, shorter duration formats for the instruction of Technician, license class instruction. The specific questions were posed to investigate the feasibility and cost of preparing materials for shorter form instruction. To answer those questions adequately I conducted a broader investigation of the kinds of formats that are currently being used and what materials are being used.

I interviewed eight instructors from different parts of the country who are actively conducting regular classes to find out what format is working well for them. The sample ranged from those conducting one day classes, to those conducting weekend and compressed classes, to classes conducted in a more traditional format over 8 or more weeks. I also sat in on a class being conducted locally that was offered in the traditional 10 week format.

What seems to be consistent from these conversations and from reviewing the class listing information that we collect is that instructors who try to attempt to do any instruction beyond drilling the correct answers to the question pool are providing multi-day instruction that involves more than 10 hours of instruction.. The traditional concept of 18 hours of instruction over 8 or 9 weeks still occurs, but more compressed instruction over fewer weeks and fewer days, offering almost as many, or nearly as many total hours of instruction, seems to be becoming more attractive for students and instructors alike. The number of hours of instruction is what governs the amount of content that can be addressed and, as a corollary, what is needed for instructor materials. So instructor materials such as those offered by ARRL, that are developed for 18 hours of instruction can be used and adapted in 2-hour increments over 9 weeks, or, for 3 6 hour sessions over 3 weeks, or 2 8-hour sessions over a weekend, etc. In fact, my conversations with instructors and our recent survey indicates that ARRL’s instructor materials are being adapted in this way.

Rather than dictating a prescribed format for their course, more and more instructors respond to the needs of their audience to develop a format that is workable within time and access constraints, and/or tailored to needs and interests of a particular audience. From my interviews with my sample group of active, seasoned instructors, I saw one very important theme. All of them have adapted their instructional format to the needs of their audience and to their own capabilities as an instructor. They borrow materials, adapt them, develop their own, add information from their personal experience and frequently work with a team of other instructors to employ the resources, knowledge and time they each can contribute in the best way possible. This kind of adaptation makes them effective, and probably much more successful than an instructor who uses ARRL’s, or someone else’s material and follows it faithfully and prescriptively.

The fundamental difference between a more traditional multi-week format and a more compressed format is in the time allowed for students to think about the material, digest it and integrate it. Short cutting this time is no small loss, but in these times, when potential students are challenged by many competing demands on their time, and instructors have similar competing demands, it is a pragmatic trade-off. The reality is that students often lose interest or find it difficult to sustain a commitment to complete a course that runs over an extended time period.

**Benefits of Compressed Format**

* access for potential students with busy schedules or challenges of distance
* reduced potential for distraction s/conflicts deterrring completion
* retention of some information may be improved for the purpose of exam success
* quicker outcome

**Benefits of Longer Form Preparation**

* more time for “digestion “ of information, more time for development of thoughtful questions and integration of material
* more time for instructors to develop instruction that is responsive to the particular needs of a student audience
* more time to include practical content useful to the new ham
* more time for relationship building with the ham radio community

The online survey I conducted with registered instructors in December shows that though many different formats for instruction are reported, the majority still offer more traditional multi-week formats. (See summary at the end of this report.) The biggest change to provide instructor materials for the compressed format courses that the Board requested we investigate because of their increasing popularity is simply to recognize alternate formats as an option and give instructors “permission” to configure the format of their instruction differently. The trade-off is to address the content areas touched upon by the question pool as effectively as possible within a manageable number of total classroom hours. Instructors are using a variety of strategies to address the problem of students not having time to process and integrate the material in the compressed instructional format. Most often these include pre-study and pre-testing to identify the areas where instructors will spend the most class time.

One instructor I spoke with makes no apologies for his success licensing students in a one day “cram” course in which the single focus is a drill session concentrating only on the correct answers to the exam questions. He offers classes in a rural area in which students travel several hours and long distances to participate. They simply don’t have the luxury of taking more time and making many trips for a longer format class. So this instructor emphasizes connecting new licensees to a mentor, ideally someone who lives near them, before they leave. He has also developed several mini presentations in Power Point format to help new licensees get started with the challenges of getting on the air. One might argue, as this instructor does, that this kind of instruction actually has more practical value to the new licensee than more extensive instruction that might be offered for exam preparation because the question pool is so little directed toward operating practice.

Though often criticized for his approach to license instruction, the instructor mentioned above also made an interesting comment: if we wanted to shut down” cram” courses all we would have to do is increase the question pool beyond 350 questions to make it unmanageable to cover in a single day. That approach doesn’t seem constructive but it does indirectly raise the issue of ARRL leadership with the NCVEC and its Question Pool Committee. ARRL leadership may wish to consider whether it would like to renew its efforts to take a more proactive leadership role to influence the development of a well-defined syllabus that would guide the question pool for the license exam. ARRL leadership may also want to consider other initiatives that are afoot asking for a restructuring of the FCC licenses to add a new entry level license, resembling the former Novice license, that would focus more on practical topics such as operating and safety, with less emphasis on electronics, and offer license privileges more appropriate for a beginner.

There is no single best prescription for format or hours of instruction for success with attracting students or the result of getting them licensed. At ARRL I think we need to recognize what is valuable about each approach. In 2009 when we last surveyed purchasers of our Technician license study guide (the survey included only customers of ARRL), we learned that only 29% had participated in any kind of class as part of their preparation. It would seem that the value added of a class is the opportunity to connect new licensees with a local club and build a relationship for continuing involvement and growth in the amateur radio community.

I think we all recognize that the current Technician question pool that must be mastered to receive a Technician license is not focused upon preparing future licensees to operate. The exam preparation class provides an opportunity to offer demonstration of operating procedures and the opportunity to encourage and teach correct operating procedures so that new licensees are better prepared to enter the mainstream of the community. Efforts instructors/clubs make to offer these kinds of demonstrations or to offer follow-on classes to provide this kind of instruction may have even more value than the instruction for license preparation, since much of the content learned for the license exam is quite often forgotten in a few weeks because it is not applied in practice.

To the extent that any positive classroom contact provides these opportunities there is a benefit, but it would also seem that more classroom hours productively spent on content that has utility might serve to enhance the possibilities for establishing a relationship to the community.

**Survey of Instructors**

In December I conducted an online survey with instructors in which I asked some questions about the format of the Technician classes they have offered during the past 2 years. I received 524 survey responses overall and 433 intelligible responses to the questions about format and hours of instruction.

From the responses it is clear that there is considerable variability in the format of class offerings. The survey asked respondents to choose one of 4 categories as a best fit description of their format. In a few cases comments indicated that multiple formats are used for delivery the same number of hours of instruction. These responses were described as “multiple.” Here is a summary from the survey:

|  |  |  |
| --- | --- | --- |
| **Class format** | **# using this format** | **% of total** |
| One Day | 36 | 8.3% |
| Weekend/Two-day (e.g. Thurs/.Fri, Sat/Sun, etc.) | 72 | 16.6% |
| Compressed (2 weekends, or 3-4 sessions within a span of 2 weeks) | 64 | 14.8% |
| Multi-week (more than 4 sessions meeting over a span of more than 2 weeks) | 258 | 59.6% |
| Multiple (total hours of instruction the same but offered in multiple configurations) | 3 | .7% |
|  | 433 | 100% |

The following graph shows the total hours of instruction reported across all formats of instruction.

The average number of classroom hours of instruction reported from all respondents was 15 hours. The median of reported hours of instruction was also 15 hours.

Looking at the distribution of the data, reported total hours of classroom instruction might be grouped for convenience as follows:

|  |  |  |
| --- | --- | --- |
|  | **# of reports** | **% of total\*** |
| 8 hours or less | 63 | 14.5% |
| 12 hours or less | 169 | 39.0% |
| 12-20 hours  | 260 | 60.0% |
| More than 18 hours | 124 | 28.6% |
| More than 20 hours | 58 | 13.4% |

\*Note: This does not sum to 100%--some of these categories overlap.

**Conclusions and Recommended Actions**

As a result of the study under-taken and information provided by the recent instructor survey conducted in December I recommend the following for the next revision of the ARRL Technician Instructor Manual:

* Include specific suggestions on how to prepare students for the exam in 12-16 hours of instruction. A class that offers fewer hours of instruction might limit the number of topics covered. To be successful, this would require that students are informed in advance about the topics to be addressed and those that they must study on their own. Strategies for selecting topics to pre-study or self-study and topics to emphasize and those to minimize in classroom time will be included.
* Include more specific instructions on demonstrations of ham radio operation.
* Though a one-day “cram” class is often a successful strategy, it is not one that needs lesson plans or resources other than the question pool. The grouping of question pool questions in topic order correlating to ARRL instructional strategy may be useful for this format and can be easily extracted from the ARRL materials, though many instructors adopting the “cram” style simply follow the order of questions as presented in the question pool. If that is the strategy, there are many other materials prepared by instructors and shared online that focus on a simple review of the question pool.
* More emphasis on the importance of relationship building and linking new students to mentors and the ham radio community.
* Inclusion of information about ARRL services and appeal to membership within the instructor resources.
* Update content to address changes in the Technician question pool and to improve lesson Power Point visuals in some content areas, adding additional illustrations and images.

The budget for the new Technician Instructor Manual project addressing the needed updates, and the additions is $15,000. At the request of the Education Sub-committee of the Programs and Services Committee, the new Technician Instructor Manual will be offered free online to registered ARRL instructors. Similar to the model that we have used with the VE manual, a digitally printed version will also be offered for sale.

In addition, we should pursue identifying instructional designers who can develop animations or videos on key topics to supplement instruction. Identifying the talent to do this work well for a reasonable cost has always been a challenge. A budget of $25,000 is suggested to begin with a few selected topics. We plan to make this budget request in the 2015 budget year.

1. The Board motion was as follows: “Whereas many radio clubs and groups conduct training and preparation classes for people seeking Amateur Radio licenses, and whereas in recent years many of these classes and courses have been offered in shortened forms, such as weekend, or a few days or weekends, and whereas the ARRL works with a significant number of volunteer instructors, and is a primary supplier of training publications, and whereas many of these materials are geared toward multi-week training, now be it resolved: That staff be directed to investigate the feasibility, benefits, and costs of preparing training materials crafted for shorter training sessions, such as weekend, 3 day 4 evening, etc.” [↑](#footnote-ref-1)