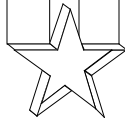


## ***Audio-Tutorial Method***

- ★ Samuel Postlethwait
- ★ Purdue University, 1961
- ★ audio-tape as supplements to lectures
- ★ help students lacking prerequisite skills to keep up with classes
- ★ other material beyond lecture tape added: diagrams, photos, plants, text, workbook

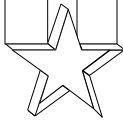


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The Audio-Tutorial method was created by Samuel Postlethwait of Purdue University in the early 1960s. Although dated, the method has the potential to make a comeback with the onset of streamed audio and video tracks over the Internet.

## *Three Phases (1)*

- ★ General Assembly Session (GAS)
- ★ used at beginning of course to orient all students to approach, objectives
- ★ used during the course to present a film, guest speaker, occasional lecture, or final exam

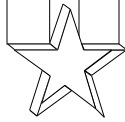


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The A-T method encompasses three phases. The first phase, a general assembly session, refers to situations in which the entire class assembles. GAS sessions are held at the beginning of a course and at other times when general instruction is required.

## *Three Phases (2)*

- ★ Independent Study Session (ISS)
- ★ on their own, the student reads, writes, or manipulates learning material to master a set of objectives
- ★ instructor/TA available in learning center to provide support
- ★ student guided by audio-tape, but other support material available (e.g., film, slides)

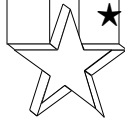


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The second A-T phase is independent learning. Each student accesses the compiled course material in units. The audio tape and learning guides originally were provided in a study carrel with a student assistant available to answer questions. Today, A-T units could be provided in a computerized or online format, perhaps with asynchronous peer or tutor scaffolding using e-mail or electronic bulletin boards.

### *Three Phases (3)*

- ★ Small Assembly Session (SAS) or Integrated Quiz Session (IQS)
- ★ small groups/cohorts of 8 students meet TA at end of week to review material they covered on their own
- ★ students asked to present/teach others one or more objective; peers correct and revise
- ★ print-based test/quiz follows

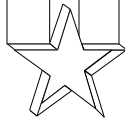


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The third A-T phase is the small assembly session in which small teams meet to review weekly materials. A student assistant leads the teams, asking each learner to recite or teach the others about some concept covered that week. If a student responds incorrectly, other students can correct the faulty response. After discussion and clarification, a quiz or test is administered to all students.

## *Advantages*

- ★ students can adapt study pace to their ability
- ★ students can adapt study time to their schedule
- ★ better students are not held “captive” and can use their time more effectively
- ★ more individual attention provided for

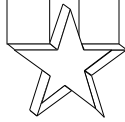


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Advantages of the A-T method include allowing students of varying abilities to master course material. Slow students are not lost by a fast-paced lecture, and students with advanced understanding are not slowed by others. The use of behavioral objectives specifies precisely what each student is to accomplish.

## *Disadvantages*

- ★ students must be self-directed, must take responsibility for their own learning
- ★ considerable development time for tapes
- ★ must prepare or acquire a large set of materials (30 carrels?)

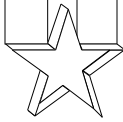


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Students in A-T approaches must be self-directed, or they could fall behind quickly. Weekly quizzes and discussions should help to keep students on task. Further, whether developing materials for traditional audio tape or Internet-based streaming, development time could be substantial. One consideration is the shelf-life of your content. If the subject you teach changes infrequently, it may be worth the time to develop a large, modular A-T course. If your content changes constantly, you may not find this method to be productive. Finally, online course modules won't teach themselves. Part of this model is discussion and debriefing by knowledgeable peers and tutors. How will you include this social collaboration into your course? It is a critical component.

## *Developing an A-T Unit*

- ★ list all objectives to be taught
- ★ list activities to be used in accomplishing objectives, along with media and teaching aids
- ★ decide phase in which the activities will be held (GAS, ISS, SAS)
- ★ arrange activities in proper sequence

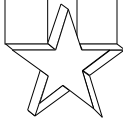


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The following slides describe a sample A-T unit on basic photography skills.

## *Sample Lesson*

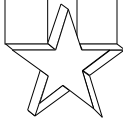
- ★ Photography 100
- ★ 200 students
- ★ course opens with GAS
- ★ course structure explained, requirements outlined



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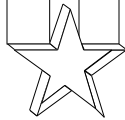
## *Sample Lesson*

- ★ student enters learning center, picks up unit 1 objectives...
- ★ given a diagram of a camera, the student will point to the aperture, lens, viewfinder, focusing ring, ASA specification, F-stop ring, and film advance button
- ★ given the name of a camera part, the student will describe the function of the part



## *Sample Lesson*

- ★ student picks up unit 1 tape from help desk, sits at carrel
- ★ student plays audio tape...



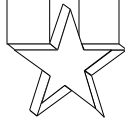
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Sample audio chunk...

“Hi, and welcome to unit 1 of photography 100. Today we will be learning about the basic parts of a camera, and the function of each part. By now you should have read the objectives for this unit. If you have not, please stop the tape and begin again after you’ve read them.”

## *Sample Lesson*

- ★ audio tape directs student to perform some actions...



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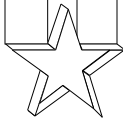
Sample audio chunks...

“Now we are ready to begin. Please open your workbook to page 25 and follow along with the diagram as I explain. Part A is the aperture of the camera. This is how we control the amount of light going into the camera.”

“After these instructions, please go to the experiment table. Increase the F-stop number while looking through the viewfinder. Notice any changes in the amount of light. When you have finished, come back to your study booth.”

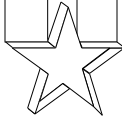
## *Sample Lesson*

- ★ the student might further be instructed to watch a videotape showing camera operations
- ★ the tape can be replayed until the concepts make sense
- ★ to cover a unit might take this student 2.5 hours, another student only 1 hour



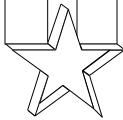
## *Sample Lesson*

- ★ on Friday, the student and 7 others convene at their assigned time and location for a small assembly session (SAS)
- ★ the instructor is a TA or graduate student in the College of Communications
- ★ the instructor asks the student to tell her about the camera aperture and lens
- ★ the instructor opens discussion on these parts for clarification and correction



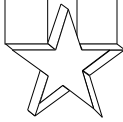
## *Sample Lesson*

- ★ after all students are quizzed orally, the TA distributes a short, 15-minute quiz on unit 1
- ★ the TA may overview the next unit and remind students to return to the learning center for independent study prior to their next scheduled session



## *Future of Audio-Tutorial*

- ★ filmstrips, tapes, slides, realia? do we use this stuff anymore?
- ★ what about digital audio
- ★ SoundEdit
- ★ where does it go... PowerPoint, Authorware
- ★ oh yeah, and the Internet...

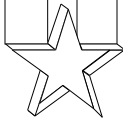


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O.k., this model does seem a bit out-dated, but have we come full circle? Can't we begin to record digital audio with programs like SoundEdit, then plug that into PowerPoint shows, or Authorware computer modules, or even the Internet? Perhaps a better question is should we be creating modular instruction, or are other approaches to teaching and learning more effective? A-T is rather behavioral in nature, with students mastering content pre-specified by the instructor. A certain amount of basic knowledge is important, but if we are shooting for those higher-order critical thinking skills, other methods such as cooperative learning or authentic case debriefing might be more effective. Food for thought.

## *Internet-Based Audio-Tutorial*

- ★ the Internet may become the medium of choice for audio-tutorial approaches
- ★ let's look first at what it CAN do...

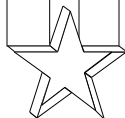


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How might the Internet support or fail to support A-T methods?

## *Internet Audio*

- ★ you can receive at least three categories of audio on the Internet
- ★ MIDI (music data only), 127 predefined instruments and one drumkit
- ★ different sound cards play it differently
- ★ LiveUpdate provides free player
- ★ see <http://www.gohts.com/learn/audio.html> for a sample embedded MIDI file

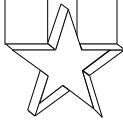


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The Internet is capable of delivering MIDI music, which does little to facilitate A-T approaches, short of perhaps music appreciation courses.

## *Internet Audio*

- ★ 2nd audio category for Internet is similar to MIDI, but contains extra digital information or a “sampled” sound to be played
- ★ MIDI + SBk, SF2, SDS; Beatnik, MOD



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## *Internet Audio*

- ★ 3rd audio category simply returns REAL audio to the user/learner
- ★ most applicable for audio-tutorial
- ★ many formats (.au, .ram, .wav, .mp3)
- ★ two methods of delivery...
  - download and then play (see .mp3, .au)
  - stream the file a small portion at a time (see RealPlayer and .ram files)



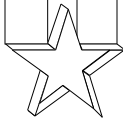
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The real potential for A-T moving on the Internet comes from streaming media technology. Streaming is a technology that downloads part of a media file to a user's computer, which begins to play while the rest of the file continues to download. This constant-download process speeds up the old way of downloading files, which was simply to wait for the entire file to download before playing it back.

Even if a course creator does not have the ability to encode and stream media files from the requisite streaming server, digital audio files can be placed online and downloaded by students. The process is simply slower with the same net result.

## *Disadvantages of Internet Audio-Tutorial*

- ★ where's the "tutor"? e-mail? b. boards?
- ★ what about experiments and manipulatives?
- ★ can make some interactivity with Java, Javascript, Shockwave (virtual experiments)
- ★ what about materials?
- ★ HTML, web pages, online slide shows
- ★ must ensure browsers can handle media



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If we place audio-tutorial units on the Internet, how well does this translate to the original three-phase model of Postlethwait? First of all, where is the tutor? Will this person be available all the time, or only some of the time? How will they communicate with students? Further, traditional A-T units made use of manipulative materials in addition to audio instructions. If certain tasks are psychomotor, requiring some motion (e.g., tying a fly fishing lure), then how do we provide those materials to learners if they are not in a lab setting? It is possible to create some simulated environments, but these may not be as realistic as hands-on. On the other hand, internet-based simulations may be better at displaying expensive, dangerous, or difficult-to-visualize processes like splitting atoms.