

SKILLED TO BE A FIRE EXPERT

Instructions on lecturing to adult specialists

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1 Introduction

Knowledge on fire safety needs to be upgraded continuously, because of the development of building materials, techniques in building construction, changing way of living, new kinds of fire hazard due to new technologies, etc. Universities and organizations, providing training courses needs to upgrade knowledge of teachers and lecturers, upskilling and reskilling students and professionals, who are working on different fields of fire safety on daily basis:

- architects and other engineers, designers of fire safety in buildings,
- mechanical engineers with knowledge on extinguishing, smoke control, and other mechanical systems for fire protection,
- electrical engineers with knowledge on fire detection and alarm systems,
- producers of products for fire safety in buildings,
- installers of products for fire safety in buildings and providers of other services for fire safety
- fire fighters,
- forensics,
- fire safety experts, working at companies, who are taking care of fire safety at working processes,
- insurance fire experts,
- fire inspectors, etc.

Knowledge in the field of fire protection can be very specific; some fire experts might know more on the specific subject than the lecturer or trainer. Up-to-date knowledge on fire protection can be provided by the professionals listed above, so they can easily find themselves on the other side of the lecture stand.

The core of the project Skilled to be a Fire Expert is to collect up-to-date knowledge, to digest the information on different levels and give a useful output to one or, preferably, to all above listed interested parties. Proper exchange of information enables everyone to learn from others and give one owns contribution to valuable intellectual output on specific fire safety topic. The goal of the process is overall improvement, not pointing out the mistakes, done by others or justifying wrong doings. A positive approach and consideration of colleagues' knowledge is the key to good communication, knowledge transfer and professional advancement.

Teachers and university professors have knowledge in the field of andragogy. On the other hand most fire experts have a lack this knowledge. This document provides some guidelines for an appropriate approach to knowledge transfer between adults with different knowledge backgrounds.

2 Principles of lecturing to adults

The general rules of teaching to adults must be considered. The adults learn best when:

1. understand why the topic is important to know or do, especially in their professional life,
2. have the freedom to learn in their own way,
3. learning is experiential,
4. the time is right for them,
5. the education process is positive and encouraging.

Principles for instructing adults effectively are:

1. Act as a leader, helper, guide, change agent, coordinator, and facilitator of learning.
2. Promote active participation and three-way communication (learner - teacher, teacher - learner, learner – learner).
3. Develop a collaborative climate.
4. Recognize learners' individuality.
5. Assist learners in setting and understanding goals.
6. Use effective questioning.
7. Be experience-centered.
8. Promote mutual problem solving.
9. Be a group member.
10. Reinforce learning through self-evaluation.

3 Teaching styles

There are basic 4 teaching styles and a mixture of them:

1. The Authority Style
2. The Delegator Style
3. The Facilitator Style
4. The Demonstrator Style and
5. The Hybrid Style

The choice of style depends on the lecturer and the listeners.

4 Types of Classroom Activities for Adults

There are different types of activities to attract adults, like:

1. Quizzes

Quizzes are a fun way to engage learners and there are many types of quizzes you can devise, such as multiple-choice, true/false or fill-in-the-blank quizzes.

You can ask participants to do quizzes on their own, or you can ask them to work in groups and even set a quiz up as a competition, whereby the group that gets most questions right wins.

When designing a quiz, it is important to keep it simple. A quiz should lighten the mood, rather than feel like a test.

When to use quizzes: Quizzes are useful when you want your learners to revise a topic and also when you want to check their understanding.

2. Buzz Groups

[Buzz groups](#) are short discussions that are done in pairs or groups of three people at the most. They are called buzz groups because, as participants start talking, they will generate a buzzing noise in the class with their chat.

Ask your participants a question; ask them to solve a problem or to agree on a definition.

Other good types of questions for buzz groups include asking participants to find similarities and differences between concepts; discussing pros and cons or discussing the participants' opinions on something.

The question needs to be simple and to the point. Write the question somewhere where the participants can easily see it, such as on a board, a PowerPoint ppt slide or a handout.

Buzz groups are best when they are kept short, so give your participants up to 5 minutes and try to limit it to that timeframe.

At the end, ask each pair to report their answers to the rest of the class and then you summarize them.

When to use Buzz groups: Buzz groups are useful to engage participants who are shy and are not comfortable working with big groups. They are also good for participants to start reflecting on a topic.

3. Snowballing

This is a follow up from buzz groups and it consists in combining small groups into bigger groups.

So, for example, after a buzz group, ask pairs to combine into groups of four and do a follow-up activity from the discussion they had in the buzz group. You can then ask the groups of fours to combine into a group of eight for another subsequent activity.

When to Use Snowballing: Snowballing works best when the activities are connected and expand on each other. You can use snowballing when you want to guide your participants into developing a project, for example.

4. Brainstorming

Brainstorming consists in encouraging participants to come up with ideas to solve a problem or answer a question.

Brainstorming is done quickly as participants are encouraged to say whatever first comes to their minds. The aim here is not quality but quantity. The ideas will be analyzed and discussed later.

During brainstorming, ideas are not judged and the flow of new ideas is instead preferred. All ideas are welcomed.

You can run a brainstorming session with the whole class at once, as you write down the answers, or in groups, so each group writes down their answers and then they present them to the rest of the class so the ideas can be combined or improved.

At the end, the most useful ideas are chosen.

When to use brainstorming: Brainstorming is very useful for problem-solving. Also, you can use a quick brainstorming session to introduce a new topic, so that participants come up with their own solution first before you explain the topic to them.

5. Discussions and Group Learning

When introducing a discussion, make sure that the topic meets one of the learning objectives of the course.

In order to be useful, a discussion needs to be structured and very focused.

You start a discussion with one question, and then you can have a series of follow up questions if it is useful to delve deeper into a topic, whilst maintaining focus. For instance, as you facilitate the discussion, you can ask probing questions, such as 'Can you say a little bit more about that?'

The question needs to be clear and concise and always use [open questions](#). A closed question only requires a yes or no answer and does not lead to any interesting discussions. For example, if you ask 'Is team-work important?' participants may just answer yes or no and that is the end of the discussion. If, instead, you ask, 'Why is teamwork important?' they will elaborate.

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Also, good questions are personal and/or controversial. A personal question requires the participants to express their personal opinion or to tell something that they experienced. If you are looking for an in-depth discussion, ask participants to work in small groups as smaller groups encourage everyone to participate.

At the end of the activity, ask each group to summarize their discussion to the rest of the class (they can nominate one person to present) and then reflect with the whole class to summarize everything that all the groups have discussed.

When to use discussions: Discussions are useful when you want participants to reflect on something in-depth and for topics that involve attitudes and awareness, rather than factual information.

6. Debates

Whereas a discussion encourages participants to cooperate and to explore a topic, debates are competitive. Groups or individuals are pitched against one another to put their argument forward.

There are many ways for you to organize a debate but, just like a discussion, a debate needs to be well structured. Unless participants are already well informed about the arguments on a specific topic, give them a scenario or a case study to debate.

You can ask participants to debate in pairs or in groups. After a pair or two groups of participants debate, the other participants listen and make a decision at the end as to which argument was stronger.

Another way to run a debate is to ask each person or group at the opposite sides of the debate to switch sides at the end of the debate.

When to use debates: A debate is useful when you want learners to understand alternative viewpoints.

7. Presentations

Presentations consist in dividing participants into small groups and asking them to design a short presentation together and deliver it in front of the class.

The presentation can be produced as a result of research, or simply as a result of a short group discussion.

The difference between asking participants to just share their discussion with the rest of the class and doing a presentation is that the latter is more formal.

For a presentation, participants come to the front of the room and each person in the group takes turns to deliver a part of the presentation.

Depending on the resources and time available, they can use visuals such as PowerPoint slides or a sheet of A1 paper or simply speak in front of the rest of the class.

When to use presentations: They are very useful, of course, if you are teaching presentation skills, as a way for participants to practice. They are also good for teaching other topics though, as another way to involve students actively.

To do a presentation, participants really need to focus on the topic; they need to work well together and it is a good way for them to take ownership of their learning.

8. Role-play

With role-play, you give your participants a scenario and they act it out with each participant playing a different role.

Commonly, you run role-plays in groups of three, where two participants play a role each and one participant acts as an observer (if the class is not divisible by three, there can be two observers). You can run the role-play more than once for the same group so that participants can rotate roles.

When to use role-play: Role-play is very useful for any type of training that involves interpersonal skills. For example, it is good for teaching how to give feedback, how to handle conflict and communication skills.

Alternatively, you can have just one performance, with one group of participants acting out the roles, while the rest of the class observes.

9. Training Games for Learners

There are many games that you can do for your training sessions, too many to list here. We have listed some games in our '[25 Corporate Training Activities' eBook](#), which you can refer to.

Games are usually fun activities that can involve the use of props; they can be competitive or at least present a challenge, and are usually done in groups. Some games can be done sitting down and others standing up or moving around.

When to use games for Classroom Training: You can use games at the start of a training session to allow participants to become familiar with each other (the so-called ice-breakers), or during the session when you want to re-energize your participants.

There are a couple of things you need to be aware of though when it comes to using games for training.

Firstly, every game must be connected to a learning objective. Asking participants to do random games that have no connection with the topic can be counterproductive (as participants will wonder what the point is) and a waste of time.

Secondly, make sure you use games that all your participants are comfortable with, based on variables such as their age, gender, the culture of belonging and job role.

[Equality & Diversity Course Materials – Learn More](#)

10. Problem-solving Activities for Learners

Problem-solving consists in giving participants a problem to solve such as a scenario that poses a problem, a practical task to solve, a puzzle or an enigma.

When to use problem-solving: Problem-solving is useful when you want to encourage creativity; for practical topics that require hands-on involvement or for scientific subjects.

11. Case Studies in Lesson Plans

Case studies consist in practical scenarios, which reflect a real-life situation involving people (they do not have to be situations that really happened but they need to be believable and realistic).

Rather than being an activity in itself, a case study is something that can be used as material for another activity.

When to use case studies: Case studies are useful for presenting participants scenarios that can be used for discussions, debates, problem-solving or role-play.

The beauty of case studies is that they give participants real-life examples, which are relatable and bring a topic to life, making it relevant.

12. Asking Questions

Asking questions is not an activity as such, but it is a very important tool for a trainer to engage participants.

Instead of explaining an idea straight away to your participants, lead them to that idea by asking questions. It does not matter if they give wrong answers as you will guide them and explain the concept later.

The important thing is that the emphasis is on understanding rather than simply knowing something.

So, for example, if you are [teaching presentation skills](#), instead of just explaining straight away what the main qualities of a good presentation are, ask your participants ‘What do you think the three best qualities of a good presenter are?’.

You can also ask a series of questions to delve deeper into a topic.

You can also ask your participants’ questions after you have covered a topic, as a way of checking if they understood.

When to use questions: Every time you are introducing a new topic and whenever you want to reinforce the participants’ learning or test their understanding.

Bonus Idea: Using Visuals

You can use visuals as a starting point for another activity. For example, you can use pictures or videos to start a conversation. Likewise, you can ask participants to produce visuals as an activity.

For instance, you can ask them to draw a picture to express a concept, to draw a diagram or to take a photo (depending on the situation).

Another type of visual you can ask participants to draw is a [mind-map](#). Mind-maps are a useful way to separate a topic into sub-topics or to look at the same topic from different points of view

5 Digitalization in education

The development of modern technologies provides the possibility of advanced educational methods using various educational systems on modern devices including desktop computers, mobile devices (mobile phones, tablets) which may use local installed software or web-based solutions. The availability of these systems is also advantageous for distance education and training, which can save time for practical learning and reduce required time for face-to-face theoretical education and transfer it for practical training.

The very common educational platforms are learning management systems - LMS (e.g. Moodle), which allow the use of many educational methods such as puzzles, videos, presentations, quizzes, tests, etc. These systems also allow for monitoring student progress and learning management.

Additional possible education forms are based on mobile / computer games which are usually used for delivery information and learn students in fun way.

Virtual Reality

Virtual reality has applications in many fields, including healthcare, technology, communications and entertainment. Today, virtual reality is increasingly being used in training and education of professionals. Virtual reality applications provide the ability to reduce training costs and expenses, provide interactivity, and deepen training with the ability to identify limitations in the use of specific equipment that would not be possible in the real world due to high costs or potential risks.

Virtual reality systems are categorized by their immersion. Main categories are non-immersive and immersive which may be described as following:

- **Non-immersive virtual reality system:** Non-immersive virtual reality system uses conventional graphics workstation with a monitor, keyboard and mouse.
- **Semi-immersive virtual reality system:** This system uses relatively high-performance graphic computing system connected with large surface to display the visual scene.
- **Fully immersive virtual reality system:** Projection is delivered through head mounted device or via large projection surface, which encases user and provides full feel of presence in the virtual reality.

VR provides a great way of theoretical learning and prepares students for practical training and education, but **VR alone cannot replace practical learning.**

There are numerous VR training and education systems for education in fire safety focused on various groups including employees, fire engineers, firefighters, fire investigators, etc. The most known are XVR, FLAIM, etc.



6 Conclusions

This document was prepared with the aim of helping lecturers to choose appropriate ways of transferring their knowledge to adult listeners/students from different fields of fire safety, with different prior knowledge. It is the basis for further research and development of various teaching methods, especially for lecturers without previous pedagogical or andragogic education.

We hope that the project [Forum](#) will also develop as a place for the mutual exchange of interesting approaches to teaching and the mutual exchange of knowledge of experts in the field of fire protection.

References

Holmes Talisha (2021) General Assembly, '5 Principles for Teaching Adult Learners'. Retrieved from <https://generalassemb.ly/blog/principles-teaching-adults/>

Avraham Z. Cooper, MD and Jeremy B. Richards, MD, MA (2016) AAIM PERSPECTIVES, VOLUME 130, ISSUE 3, P376-381. MARCH 01, 2017, Elsevier Inc. Alliance for Academic Internal Medicine. Lectures for Adult Learners: Breaking Old Habits in Graduate Medical Education. doi: <https://doi.org/10.1016/j.amjmed.2016.11.009>

Peterson, Deb. (2020). '5 Principles for the Teacher of Adults'. Retrieved from <https://www.thoughtco.com/principles-for-the-teacher-of-adults-31638>

TIME project partnership ERASMUS+ (2016), Olympic Training & Consulting Ltd, 'Self-study Course for Trainers of Intercultural Mediators, Module 2: Adult training methodology and techniques'. Retrieved from http://www.mediation-time.eu/images/TIME_O5_Trainer_Course_Module_2.pdf

Cantor, Jeffrey A. (2001), 'Delivering Instruction to Adult Learners. Revised Edition'. ISBN: ISBN-1-895131-21-9. Retrieved from <https://eric.ed.gov/?q=helper+AND+professions&id=ED469267>

INNOVA (2015) 'How Effective are these Five Teaching Styles?' Retrieved from <https://www.innovadesigngroup.co.uk/news/how-effective-are-these-five-teaching-styles/>

Symonds, Valeria, PhD (2021) Symonds Research Certified training materials, '12 Types of Classroom Activities for Adults | Examples to Engage Learners in Training Sessions'. Retrieved from <https://symondsresearch.com/types-classroom-activities/>

Hozjan, T., Kempna, K., & Smolka, J. (2020). Simulation and Modelling in Fire Safety: Virtual Reality for Smart Firefighting. In D. Rehak, A. Bernatik, Z. Dvorak, & M. Hromada (Ed.), Safety and Security Issues in Technical Infrastructures (pp. 232-262). IGI Global. <https://doi.org/10.4018/978-1-7998-3059-7.ch009>