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# Instructor Guide: Best Practices and Sample Activities for Virtual Learning

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This report is an instructor guide that contains guidelines and best practices for teaching in virtual learning (VL) environments for Army instructors and curriculum developers. These best practices were drafted through a review of research on VL in civilian education and based on previous research from the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI). Research suggests that strategies for effective face-to-face instruction similarly show promise in the VL environment. Therefore, this guide discusses key elements for effective VL and the methods for establishing social presence, utilizing formative assessments, and methods for providing feedback. Additionally, this guide contains example activities to enhance VL that can be adapted to various course content. The final section of this document is a lesson guide with suggestions on how to build a VL class utilizing the Army's Experiential Learning Model (ELM; see The Army University, *Adult Teaching and Learning User's Guide,* Army University, n.d & U.S. Army Training and Doctrine Command, 2021). This report is intended to serve as a guide for Army instructors and curriculum developers to help them plan for VL and understand effective VL methods to enhance Army instruction.

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INSTRUCTOR GUIDE: BEST PRACTICES AND SAMPLE ACTIVITIES FOR VIRTUAL LEARNING

## EXECUTIVE SUMMARY


Research Requirement:

As the Army looks to modernize, Army instructors may be tasked to teach in a distributed learning (DL) environment. This will likely involve instructing online through platforms such as MS Teams or Blackboard. Therefore, Army instructors and curriculum developers need to understand best practices for virtual learning (VL) and how to utilize the Army's Experiential Learning Model (ELM; see The Army University, *Adult Teaching and Learning User's Guide,* Army University, n.d; & U.S. Army Training and Doctrine Command, 2021) in a VL environment. It is important for Army instructors to know how to effectively teach and engage Soldiers through VL, so the quality of instruction and learning does not decrease as instruction moves from in-person to virtual. In order to do this, Army instructors need additional information and/or training on how to effectively teach in VL environments to optimize adult education experiences in the Army. To address this need, the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) drafted this report as an instructor guide to summarize best practices from the research on VL in civilian education and previous ARI efforts supporting Army instructors and curriculum developers.

Procedure:

To create this guide, ARI conducted a literature review of current best practices for VL. The review included research on VL in civilian education and on VL teaching methods that aligned with the ELM. Then, ARI reviewed the best practices through the lens of the ELM and drafted a lesson guide providing recommendations for how to implement VL using the ELM and the identified best practices.

Findings:

Through the literature review, ARI identified current best practices and example activities for effectively teaching and engaging students in VL. Importantly, the strategies for effective face-to-face instruction similarly show promise in the VL environment (i.e., high instructor presence, high-quality instructor-student interactions, academic support beyond the classroom, class cohesion, and trust; Lockman & Schirmer, 2020). Further, when designed strategically, VL can lead to learning outcomes that are as good as those of a traditional classroom (Means et al., 2009). This suggests that course design, and not the mode of delivery (i.e., virtual or in-person), has the greatest effect on learning outcomes, underscoring the importance of providing training materials to support Army instructors for teaching virtually (Xu & Xu, 2020). Therefore, in this guide ARI summarizes the best practices for VL. Descriptions for effectively implementing those practices in VL environments are included. Additionally, this guide contains example activities and a lesson guide with suggestions on how to build a VL lesson utilizing the ELM.

Utilization and Dissemination of Findings:

This guide was created to support Army instructors who will teach in VL environments. It can also be used as a part of a POI-specific certification course to train instructors on how to teach in VL environments. Additionally, the guide can be used as a resource for any Army instructor or curriculum developer who wishes to increase their knowledge of best practices for VL. Although this guide was written for VL, the best practices and sample activities described in this report can be utilized in traditional in-person instruction or in blended learning environments to enhance Army instruction.

INSTRUCTOR GUIDE: BEST PRACTICES AND SAMPLE ACTIVITIES FOR VIRTUAL LEARNING

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# Instructor Guide: Best Practices and Sample Activities for Online Learning

## Introduction

As the Army looks to modernize, Army instructors may be tasked to teach in a distributed learning (DL) environment. This will likely involve instructing online through platforms such as Microsoft (MS) Teams or Blackboard. Therefore, Army instructors and curriculum writers need to understand best practices for virtual learning (VL) and how to utilize the Army's Experiential Learning Model (ELM; see The Army University, *Adult Teaching and Learning User's Guide,* Army University, n.d; & U.S. Army Training and Doctrine Command, 2021) in a VL environment. It is important for Army instructors to know how to effectively teach and engage Soldiers through VL, so the quality of instruction and learning does not decrease as instruction moves from in-person to virtual. To address this need, The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) drafted this report as an instructor guide to summarize the best practices for VL to support Army instructors and curriculum developers.

When transitioning from in-person to VL instruction for the first time, there are a myriad of decisions an instructor must make. Fortunately, the key aspects for success in VL environments are the same as in-person instruction and include:

- Pre-planning to set up the course for success,
- Creating a sense of connection,
- Maintaining learner engagement,
- Evaluating student understanding, and
- Creating effective learning activities/assignments.

However, the methods for achieving these elements of success are approached differently through the use of technology. This report contains guidelines and best practices for teaching VL, as well as examples of activities that can be adapted to course content. The final section of this document is a lesson guide with suggestions on how to build a VL lesson utilizing the ELM. The guidelines and best practices included in this report are tailored for synchronous VL, meaning that the students and instructors are engaged in the lesson at the same time, similar to traditional in-person instruction. However, these best practices can be utilized for asynchronous instruction, where the instructors and students are not engaged in the lesson at the same time.

## Best Practices for Virtual Learning

When designed strategically, VL can lead to learning outcomes that are as good as those of a traditional classroom (Means et al., 2009). VL technology allows for flexibility and multiple methods for course interaction, which are benefits of this instructional modality (Luckritz Marquis, 2021). However, VL is not the most effective format for every content area. There are

unique challenges to teaching in the VL environment, and VL courses must be carefully designed to lead to desired learning outcomes. When designed strategically, VL can lead to learning outcomes that are as good as those of a traditional classroom (Means et al., 2009).

VL is most effective when students meaningfully engage as frequently as possible with the course content, the instructor, and fellow students (Lockman & Schirmer, 2020; Luckritz Marquis, 2021).

- Content
  - Needs to be grounded in students' prior experience and knowledge,
  - Learning goals must be clearly communicated to students, and
  - Activities/assignments/evaluations must align with learning outcomes.

- Instructor
  - Monitors and documents student learning (via formative assessments, assignments, etc.),
  - Provides feedback promptly,
  - Teaches and/or models meta-skills (such as how to participate in class discussion),
  - Provides support, and
  - Fosters safety, essential for idea sharing in the learning community.

- Fellow students
  - Interact via class discussions, breakout rooms, synchronous chat, asynchronous discussion boards, group projects, etc. and
  - Demonstrate the trust and safety that are essential in the learning community.

## Instructor Guidelines

Strategies for effective face-to-face instruction show similar promise in the VL environment (i.e., high instructor presence, high-quality instructor-student interactions, academic support beyond the classroom, class cohesion, and trust; Lockman & Schirmer, 2020). While planning a class in VL, reflect on the instructional techniques commonly used in face-to-face instruction to engage students and check their understanding. Many of these techniques can be done in VL. However, keep in mind that preparation for VL instruction may take more time than preparation for in-person instruction and that traditional in-person techniques may have to be adjusted to be effective for VL. Included below are best practices and strategies to keep in mind to set students up for success and support effective student engagement and social interactions in VL environments.

## Student Engagement

Research has shown that student engagement is higher when instructors (Lockman & Schirmer, 2020):

- Use multiple computer technologies to communicate (e.g., email, video conference, and/or chat functions),
- Incorporate meaningful and challenging activities (e.g., authentic learning experiences),
- Offer timely and useful feedback,
- Prompt students to reflect on course content,
- Connect course content to students' work and life experiences (i.e., prompt access to prior knowledge), and
- Use a variety of assessment techniques, including formative assessments.

## Social Presence

Social presence is the feeling that the people one interacts with are real people, and it is imperative in VL environments to facilitate effective student-instructor interaction, student-student interaction, and student engagement with course content (Mykota, 2018). In the VL environment, social presence needs to be intentionally designed into the course. Social presence is created through:

- Modeling social cues (i.e., addressing people by name, using encouragement, sharing personal stories, and expressing humor),
- Utilizing collaborative class activities,
- Creating opportunities for expertise sharing (i.e., study groups or a "good to know" page about the course students can add to),
- Providing timely feedback for assignments, and
- Providing course orientation (i.e., Day Zero) where the instructor goes over class expectations, previews the course, explains communication, and holds class introductions.

## Model Class Activities and Discussion (Mykota, 2018)

- Model how students should participate in the course.
    - Provide a model or examples of discussion comments and other assignments.
        - *Tip: If this is your first time teaching a course, keep an eye out for assignment exemplars you can use for next time (Hathaway, 2014).*
    - Provide activities early on to help students become comfortable with the technology and allow opportunities for identifying technological problems.

- Demonstrating expectations can promote clarity and encourage student participation, especially for students who are learning through VL or on a particular platform for the first time.

**Communicate Strategically and Often (Heider, 2021)**

- Check in regularly with students, especially before major course milestones.
- Respond quickly to emails and/or chats.
- Hold office hours.
- Be available. When teaching synchronously, instructors can log on early and stay in the meeting after class like they would for in-person classes. This gives students the opportunity to ask instructors questions before or after the VL class.
- Students in VL courses have greatly appreciated instructors posting a "due date checklist" at the end of each module (Bollinger & Martin, 2018).

## Module/Day Zero

Before the first day of content or at the beginning of the first class, provide an orientation to the course to let the students know what to expect, model some of the expectations and class activities, and begin to establish social presence overall (Casey et al., 2021). The Appendix includes a sample Module/Day Zero syllabus.

### Introductions to Class and Individuals

*Instructor Introductions*

- Instructors introduce themselves and provide relevant background.
    - This can be done with a pre-recorded video if the introduction cannot be done synchronously.
    - Have fun, introduce humor, and begin to establish social presence.
        - *Tip Be on the lookout for galvanizing humorous statements or events that serve to establish common inside jokes with the students. Take care not to use an event or statement that might be interpreted as "making fun of" or pitting students against each other.*

- Explain the communication approach.
    - Share with students how/when you will be in contact with them and how they can contact you.
    - Document this information on the course home page and/or class email.

*Student Introductions*

- Have the students introduce themselves and provide information on their background.
    - This can be done with a pre-recorded video if necessary.
    - Respond to students and encourage students to talk with each other.
    - This will also help with understanding the students' backgrounds and start to plan who you might want to call on to share personal experiences for Concrete Experiences (CEs) or class discussions.

        - This is also an opportunity to explain expectations around participation and sharing personal experiences.
    - Encourage students to think about how they might apply what they are learning in the course to their experiences and future roles.

**Course Orientation**

- Preview course pages and show students:
    - Where to find content (i.e., syllabus, assignments, recorded lectures, etc.),
    - Where to turn files in, and
    - Where/how to communicate (i.e., discussion boards, chat functions, etc.).

- Use this time to check tech capabilities, such as by asking:
    - "Who was able to log on?"
    - "What questions came up navigating Teams?"

*Review Syllabus and Class Activities*

- Introduce classes/modules and major activities.
- Model for students how to participate in the course and explicitly state course expectations.
- Show typical class activities and where to find them (i.e., practical exercises, quizzes, and other graded or non-graded assignments).
    - Provide a model/examples of discussion comments and other assignments.
    - *Tip: Take care to find the right balance between specificity and ambiguity in showing examples. Otherwise, students who pursue a grade over learning may copycat the example versus generating their own work.*
    - Consider assigning an initial ungraded assignment and provide feedback.

- Discuss expectations for discussion boards, exit tickets, or other formative assessments where students need to respond and/or post.

- Discuss use of cameras, chat, and audio.
    - Set the expectation that students need to respond to the chat or answer questions on the microphone.
    - Let students know that they will be called on like an in-person class.
    - If using the chat, set expectations and/or share examples of the kinds of questions or statements that meet these expectations.
    - If students have cameras, consider setting the expectation for students to turn on their cameras during introductions, at the beginning of class, or other specified times.

- Communicate bounds of acceptable learning behaviors.
    - Create and explain a class honor code.

*Review Tech Requirements*

- Make sure students are aware of the technology requirements for course success, including software to install and/or accounts to be activated.
- Create an Online Essentials tab on the course home page.
    - Provide instructions on how to troubleshoot common issues that may occur on the web-based VL platform (e.g., MS Teams, Blackboard) and start a FAQ with common questions on issues with the web-based platform.
    - Consider sending the FAQs and/or instructions via email so all students have access to the materials.

- Create a Getting Started tab that includes syllabus, course schedule, course navigation information, and instructor bio/contact/virtual office hours.
    - Walk students through the contents of this tab during Module/Day 0.

**Summary of VL Formative Assessments**

Formative assessments (FA) are relatively quick activities that inform the instructor on student progress toward learning goals. The objective of FA is to draw out information about current student understanding and misunderstanding. Instructors can then respond with information, activities, or resources to bridge the gap between current student knowledge and end-goal student knowledge. FAs typically take place during class time but can also occur in the form of assignments and asynchronous discussions (Luckritz Marquis, 2021; Gikandi et al., 2011; Bin Mubayrik, 2020).

- FA Supports (Bin Mubayrik, 2020):
    - Class participation and student engagement,
    - Student motivation,
    - Student understanding,
    - Course success, and
    - Self-regulated learning/self-monitoring.

- Strengths of FA in VL (Luckritz Marquis, 2021; Gikandi et al., 2011):
    - Multiple methods available and
    - Information can be gathered instantly.

- Challenges of FA in VL (Gikandi et al., 2011; Vonderwell & Boboc, 2013):
    - Often requires pre-planning,
    - It is a time investment,
    - Instructors and students must become accustomed to the technology, and
    - Student cues such as body language are not as apparent.

- When to Use FA:

- At the beginning of class to see how much prior knowledge students have on a subject.
- Throughout class to:
  - Check understanding,
  - Help students be aware of their own progress toward learning goals, and
  - Promote engagement and participation.
- At the end of class to:
  - Check if there is content that students missed,
  - Identify students who may be struggling or disengaged,
  - Give students an opportunity to reflect on and solidify their understanding of the content, and
  - Gain information about any points that may need to be reinforced going forward.

**Table 1.**

*Sample FA Activities*

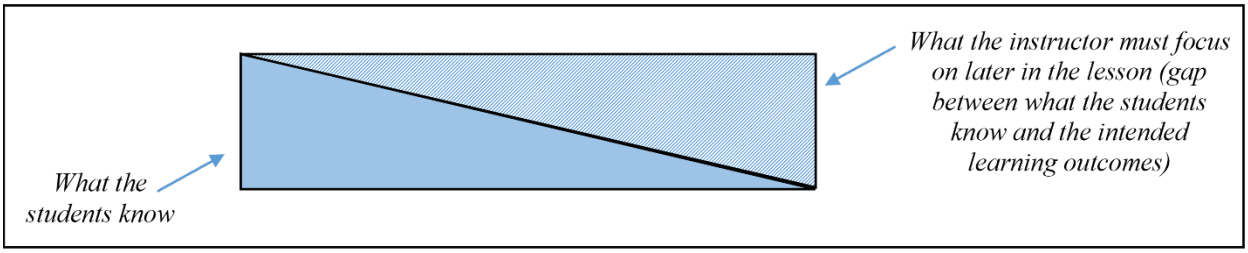
| | When | How | Examples |
|---|---|---|---|
| Polling/Class Quiz | • Assess previous knowledge<br>• Check understanding (recall) | • Raise hands<br>• Type a response into the chat (either public or to the instructor)<br>• Pre-created multiple choice or true/false quiz | • "How many of you have…" (question about previous experience)<br>• Yes/No or True/False questions<br>• Jeopardy style games |
| Small Group Problem Solving | • Focus on a topic in depth<br>• Promote critical thinking<br>• Build class community | • Share a problem-based scenario and guidelines for group interaction<br>• Place students in breakout rooms in groups of 2-6<br>• A representative from each group shares their solution with the class<br>• Classmates evaluate other groups' solutions<br>• Instructor provides feedback to each group | • "Based on [situation], how would you [desired outcome]?"<br>• Practical Exercises (discussed more below) |
| Exit Ticket | • Identify gaps in learning at the class and individual level<br>• Help students solidify/summarize a lesson<br>• Promote student self-reflection on learning and/or learning transfer | • Post a prompt (i.e., last PowerPoint slide or in the class chat)<br>• Students respond in the chat (either public or to the instructor)<br>• Instructor saves the chat and refers to this for instructional planning | • "What was the most difficult/confusing/ interesting/affirming part of today's class?" (Keefer, 2009).<br>• Ask a factual question about the most important content. |

## Formative Assessment and the ELM

Through FA and questioning, instructors can gain a better understanding of students' current knowledge and where they need to fill in gaps later during instruction. FA aligns with the purpose of Publish and Process (P&P) in the Army's Experiential Learning Model (ELM; see The Army University, *Adult Teaching and Learning User's Guide,* Army University, n.d; & U.S. Army Training and Doctrine Command, 2021). The P&P helps the instructor identify what the students know to help adapt later instruction during the Generalize New Information (GNI) stage of the ELM to "fill in" the gap in students' knowledge to reach the intended learning outcomes. Figure 1 provides a visual representation of this area of learning.

**Figure 1**

*Area of Learning: Representation of Where Instructors Fill in the Gap (Diedrich et al., 2022)*




The GNI approach should match the learning goals and needs of the students.

- Specific teaching techniques can vary and can include lecture, discussion, demonstration, practical exercises, simulation, etc.
- Instructors' lesson plans should not be rigid. Based on the P&P, instructors should tailor the GNI based on where students are currently and where they need to be, given the intended learning outcomes.

## Other Kinds of VL Activities

In addition to checking for understanding, which is the purpose of FA, class activities can foster student engagement, promote critical thinking, build class community, and prompt self-reflection. Choose class activities that align with your goals for the lesson or the learning level you want to assess in your students (Guerrero-Roldán & Noguera, 2018). Table 2 provides a list of VL activities for various learning goal outcomes.

**Table 2.**

*Type of VL Activity by Learning Goal (adapted from Guerrero-Roldán & Noguera, 2018 and expanded with information from Goodsett, 2020; Vonderwell & Boboc, 2013; Luckritz Marquis, 2021)*

| Goal | Activity |
|---|---|
| Assess Previous Knowledge/ Check Understanding/Recall | • Poll<br>• Quiz<br>• Question for the chat<br>• Raise hands<br>• Games (e.g., jeopardy)<br>• Cold calling<br>• Pre-class asynchronous discussion board<br>• Screen share<br>  ○ Have students look things up in doctrine or on a map and "share" their answer/what they found. |
| Critical Thinking | • Concept or argument/logic maps<br>• Problem solving<br>• Creating and answering questions |
| Applying Knowledge | • Problem-based learning<br>• Role playing<br>• Case studies<br>• Teaching others<br>• Authentic activities |
| Building Class Community | • Class introductions: synchronous (large or small groups) or asynchronous<br>• Icebreaker questions<br>• Sharing personal experiences<br>• Small group in-class project<br>• Small group discussion<br>• Asynchronous discussion board |
| Class Takeaways | • One-sentence summary<br>• 1-minute paper:<br>  ○ What's the most important thing you learned?<br>  ○ What questions do you still have in mind?<br>• Muddiest point<br>• Directed paraphrasing |
| Self-reflection | • Comparing current and previous understanding<br>• Comparing current understanding to benchmark<br>• Describing how content applies to your life |

## Authentic Activities/Practical Exercises (PE)

Incorporating authentic learning experiences into a course has been identified as a VL best practice (Kerr, 2011) that enhances student engagement and interest (Martin et al., 2019).

Authentic tasks are relevant to the real world, represent ill-defined problems, are complex, and provide students with the opportunities to use multiple perspectives and resources, collaborate, and reflect (Herrington et al., 2006). In other words, authentic activities, tasks, or assessments are realistic problems (Brown et al., 1989) that provide students with opportunities to make decisions and solve problems as they would in real-world situations (Gikandi et al., 2011). These activities help students' critical thinking (Goodsett, 2020), increase the validity of FA (Gikandi et al., 2011), and can support near transfer of training (Baldwin & Ford, 1988; Grossman & Salas, 2011).

Practical Exercises (PE) commonly used in professional military education (PME) are excellent examples of authentic activities. PEs can represent different types of authentic or situated problems such as:

- Goodsett, 2020
    - Problem-based learning: small groups collaboratively generate solutions,
    - Ill-structured problems: multiple solutions possible, or
    - Role-playing.

- Gikandi et al., 2011
    - Scenario-based activities,
    - Simulation, and
    - Practice finding and presenting information.

- Herrington et al., 2006
    - Preparing an analysis and report of a fictitious event based on simulated documents,
    - Writing articles for a class "academic journal," and
    - Creating memos, letters, and a final report recommending action to a fictitious organization where they are "employed" for the course.

**PEs as Checks on Learning**

PEs can be used as checks on learning (i.e., formative assessments, *Apply* of the ELM) at the end of a lesson to assess students' understanding and identify potential gaps.

- Have students work in groups or on their own to complete the PEs.
- Depending on time, have students share their answers to the PE at the end of class or at the beginning of class the next day.
- Ask before telling
    - Before you give the students the "right" answer, encourage the students to first explain their thinking and how they came to that answer.
    - Similarly, try and guide students to identify their errors or ask for input from other students before you identify the errors for them.

- PEs, especially those that involve contrasting cases, can also be used to develop the needed prior knowledge for students to be more prepared for lecture, thus creating a "time for telling" (Schwartz & Bransford, 1998).

**PEs to Start Class**

PEs can also be used at the start of a lesson (see Tucker et al., 2017). Select a PE designed to have students work on solving a particular problem, review elements of a case study, or research possible reasons for mission success or failure, etc. The PE should help the instructor work towards the intended lesson learning outcomes (e.g., mission planning or mission execution).

- After the students have completed the PE or had enough time to work on key elements, have students discuss their answers.
- Once the instructors have identified students' understanding, they then discuss the PE and provide more detailed information regarding the specific material and/or problem to be discussed in that lesson. They will "fill-in" any gaps in understanding or provide additional information.
- After this discussion, another PE should be given to the students which requires them to apply what they learned to a novel context.
- Importantly, the next PE should have the same objectives as the first PE, but the conditions and surface elements should be different to see how the students apply what they learned.
- Once the students have completed the second PE, the instructor provides feedback on the students' work and explains the intended outcomes of the PE. In this discussion, the instructor should emphasize how, regardless of the context, the knowledge and skills needed to successfully complete both PEs were the same.

**PEs as Backwards or Forward Fading Activities**

PEs can also be designed as backwards or forward fading activities (see Tucker et al., 2017). Backwards and forward chaining and backwards fading are design approaches that instructors can take to create activities that help students learn complex material or multi-step skills. Providing support at one phase of instruction frees up student cognitive resources to focus on learning another phase.

- Overall ways to help support students and reduce cognitive load in these activities:
  - Presentation of the information with guided notes.
    - Students are given partially completed notes or an outline.
    - Students fill in the information as the presentation is conducted.
  - Demonstration of procedures in steps.
    - Students observe each step then practice.
    - Instructors can then provide a completed PE where the students first complete missing steps and then complete the entire task on their own.

- In a backwards chaining PE, students practice the last component of the exercise first so that students are provided with knowledge of the results prior to learning the beginning components of the exercise.

- In a backwards fading PE, students are first shown the completed PE and then certain components are progressively removed from the PE until the students complete the entire exercise on their own.

- In a forward chaining PE, students practice the order of the task from first to last. If time allows, students should have multiple rehearsal opportunities with instructor feedback.

### Feedback for PEs

Regardless of how PEs are used in a lesson, instructor feedback is a key element for effectively using PEs (see Tucker et al., 2017). It is imperative for instructors to provide timely and clear feedback to help direct students' understanding of the exercises and their successes and errors. If needed, instructors can provide feedback to students while they are still engaging in the PE to help the students complete the exercise. Additionally, instructors should direct students to important cues or rules for completing the exercise and connect it to course or real-life outcomes. Additional best practices for providing feedback are discussed in the Guidelines for Feedback section.

## Approaches to Class Discussion

Both traditional in-person and VL courses benefit from the incorporation of class discussion. Like in-person courses, synchronous VL class discussions can occur as a whole class or in small groups. An additional modality for class discussion in VL environments is the chat feature, which allows multiple class members to contribute to the conversation at once. Asynchronous discussion boards are another venue in VL to promote class dialogue, social interaction, and engagement with course material. No matter the format, discussion prompts should be carefully chosen, and expectations should be shared with the students regarding their responses, as well as examples. Finally, students should be given feedback on their contributions to class discussion (de Noyelles et al., 2014). In the subsequent sections, we provide suggestions on how to conduct class discussions.

### In-Class Discussion Activities (Synchronous)

- Encourage students to use the chat function to ask questions. If there are two instructors per class, one instructor should monitor the chat. They can respond to students' questions and let the other instructor know that they need to stop and discuss.
    - At the instructor's discretion, students may also be assigned the rotating role of chat facilitator.

- Use breakout groups to have students review doctrine definitions and then share with the class their definitions/interpretations in their own words. This is also an opportunity for students to discuss personal experiences with the topic of discussion.
    - "How was this similar or different from what you did at your unit?"

- "Flip the Classroom" by incorporating assignments before the lesson (see Strelan et al., 2020 for a review).
    - Ask students to read material or review videos before class, then start the class with discussion questions on the material.
        - Instructors can also use breakout rooms to assign students different questions.
        - Instructors can also assign students to breakout groups and ask the students to come up with a question about the reading as a group.
    - Students may also come to class with a hook question (a question that they think will bring out important elements of previous reading; Vonderwell & Boboc, 2013).
    - Reflective writing can also be used for students to evaluate what questions they still have on assigned readings and class discussion.

- Use question prompts to promote discussion, engage thought, and learn about your students (adapted from King 2002; 2008; Xun & Land 2004):
    - *What did you see? What happened?*
    - *What is the difference between … and …?*
    - *How are … and … similar?*
    - *Could you give an example?*
    - *What is your reaction to…?*
    - *What is the significance of …?*
    - *Explain why …*
    - *What do you mean?*
    - *What do you think would happen if …?*
    - *How might … affect …?*
    - *What conclusions can you draw about …?*
    - *What are the strengths and weaknesses of …?*
    - *Which … do you think is best and why?*
    - *What evidence is there to support your answer?*
    - *How does … fit with what she just said?*
    - *I don't really get that; could you explain it in another way?*
    - *I am not sure; what do others think?*
    - *How is … related to … that we studied earlier?*

- Use discussion forums or exit tickets to require students to respond to a question and then discuss answers during class (Vonderwell & Boboc, 2013).
    - Students may also be asked to respond to peers' responses.

    - Discussion boards can also be asynchronous and used for formative assessments.
        - Instructors can:
            - Require students to post a question before class,
            - Respond to a question before each class, or
            - Bring potential discussion questions to class.

- Use case studies as a basis for discussion, such as analyzing what went right/wrong or problem-solving (Winger, 2021).
    - One way to sequence the class is to have students first use specific examples from their prior experience or through case studies to further learn the specific knowledge and information of the concepts.
    - Then the students could practice this knowledge by applying the specific declarative knowledge structures, rules, and procedures to novel contexts.

- Compare scenarios, data, tables, or images (Guerrero-Roldán & Noguera, 2018).

- Brainstorm or annotate/highlight a shared online document.

**Asynchronous Discussion Forums**

- Benefits for asynchronous discussion include that students have equal voice (everyone contributes), discussion tends to stay more on track than in-person discussion, and points can be revisited (Winger, 2021).

- Guidelines for asynchronous discussion (de Noyelles et al., 2014):
    - Use online protocols (highly structured prompts with clear roles and rules for interactions/posting deadlines) and provide students with rubrics and examples.
    - Model social cues (i.e., addressing people by name, using encouragement, sharing personal stories, and expressing humor).
    - Require and grade participation.
    - Select/create discussion prompts carefully. Time may not allow instructor responses to every post, so consider building follow-up questions or self-reflection into the prompt itself.
    - Offer prompt but limited feedback (don't dominate the discussion).

- Ideas for taking discussion in depth (Winger, 2021):
    - Encourage diverse perspectives such as personal responses, brainstorming, and hypotheticals.
    - Base discussions on case studies. Additionally, offering multiple case studies to choose from improves student satisfaction with this type of prompt.
    - Use video and/or graphics in discussion prompts or allow students to respond using videos/graphics.
    - Use Bloom's taxonomy to create discussion prompts:

        - See *Designing Discussion Questions Using Bloom's Taxonomy Examples*[1] from the University Center for Teaching and Learning at the University of Pittsburgh.
    - Consider splitting the class into groups of 6-8 per discussion board to avoid repetition in content and overwhelming the students with too many discussion posts to respond to.

## Guidelines for Feedback

The purpose of feedback is to help students clarify where they are in relation to goal learning outcomes and to provide information as to how they can progress. When giving feedback, the instructor can motivate the student, expand current student understanding, recognize effort, and provide guidance or next steps for improvement (Nicol & Macfarlane, 2006; Gikandi et al., 2011). Regardless of the class activity (e.g., PE, class discussion, poll, etc.) quality instructor feedback is important and can help establish instructor credibility.

- Overall conditions necessary for students to receive and benefit from feedback:
    - Students know what good performance is (understand the goal or standard),
    - Students comprehend how current performance relates to good performance, and
    - Students know what to do to move from current performance to good performance.

- Effective feedback:
    - Supports student self-esteem and motivation,
    - Encourages dialogue about learning progress and goals,
    - Clarifies criteria, standards, and goals,
    - Directs students to important cues or rules for a given task,
    - Is given promptly, and
    - Provides actionable information, such as a rationale and guidance on how to improve, or addresses common misconceptions.

- Other considerations for feedback:
    - In some contexts, such as class discussion, indirect feedback can also be helpful (asking leading questions or directing to resources).
    - For in-depth projects/tasks, multiple rounds of feedback may be necessary.

[1] https://teaching.pitt.edu/resources/designing-discussion-questions-using-blooms-taxonomy-examples/

**Table 3.**

*Feedback Guidelines by Assessment Type*

| Situation | Guidelines |
|---|---|
| Questions that have one right answer (i.e., polls, quiz, raise hands, question in the chat). | If an answer is correct, explain why.<br><br>If an answer is lacking,<br>• Ask a question or lead to a resource so students can improve their own answer and<br>• Acknowledge and dispel common misconceptions. |
| In-depth (i.e., small group problem-solving, student presentations). | Tie comments to<br>• Rubrics/criteria and<br>• Learning objectives.<br><br>You may want to ask questions or, in moderation, "play devil's advocate" |
| Time-lagged (i.e., exit tickets, assignments, quizzes, asynchronous discussions). | • At the start of the next lesson, summarize how the class did on the exit ticket/assignment,<br>• Address any patterns of excellence, insufficiency, or confusion that emerge, and<br>• Individualized feedback may be given in one-on-one student/instructor meetings, in written format, or audio file. A positive and informal tone is recommended (Winger, 2021; Mykota, 2018). |

## Lesson Guide: "Build your own VL Lesson"

### Introduction

The Instructor Guide covers a range of best practices for teaching in the VL environment. In this section, instructors will find information on how to set expectations for a VL course, how to implement the ELM in VL, and how to do checks on learning in VL. The Lesson Guide walks through the building blocks for a successful VL lesson.

### Background: Importance of Formative Assessments and Student Engagement

Research has shown that detriments to performance in VL courses are due to the need for high levels of self-directed learning and difficulties in enabling effective classroom interactions (student and instructor; Xu & Xu, 2020). Formative assessments have been found to increase the following in VL courses (Bin Mubayrik, 2020; Gikandi et al., 2011):

- Self-regulated learning/self-monitoring,
- Class participation,
- Student understanding and course success (scores), and
- Motivation.

For each lesson to be more engaging, it is recommended that instructors break up lecture and encourage student participation. This can be done through discussions, quick checks on learning (formative assessments), group work and/or practical exercises as described previously. Asynchronous discussion boards (completed outside of class) can also be used to facilitate discussion and tailor lectures following the posts.

### Before Class Expectation Management

On the first day you meet with your students in the VL environment, provide an orientation to the course (i.e., Module/Day Zero) to let the students know what to expect, communicate your expectations, model class activities, and begin to establish social presence (see Appendix for sample syllabus for Module/Day Zero).

- Discuss use of cameras, chat, and audio.
    - Set the expectation that students need to respond to the chat or answer questions on the microphone.
    - Let them know they will be called on like a regular class.
    - If using the chat, set expectations/share examples of the kinds of questions or statements that you are looking for.
    - If students have cameras, state your expectations around camera usage.

- Discuss expectations for discussion boards, exit tickets, or other activities where they need to respond and/or post.

## Lesson Breakdown

The ELM is a learner-centered approach to planning and executing instruction that can be applied across domains. The ELM can be applied in a VL environment. The ELM consists of five steps or "clouds" of activity that can be flexibly applied to actively engage learners. The ELM is not intended to be a rigid stepwise sequence, so the steps of the ELM are referred to as clouds to more clearly articulate the flexibility in how the elements of the ELM can be sequenced. When applied in the classroom, the ELM can be a recursive process. For a brief review, Table 4 outlines the clouds of the ELM and the expected role for the instructor and students.

**Table 4.**

*Clouds of the ELM and Instructor/Student Roles (Diedrich et al., 2022)*

| Stage Title | 1. CE | 2. P&P | 3. GNI | 4. DEV | 5. Apply |
|---|---|---|---|---|---|
| **Description** | • Shared experience to ground lesson | • Facilitated discussion/reaction to CE | • Where new information is presented | • Reflection and expression of value | • Check on learning |
| **Characteristics** | • A video, personal military experience, historical vignette, etc.<br>• Involve all students<br>• Not a pretest<br>• No right or wrong answers | • Sharing of observations<br>• Sharing of reactions<br>• Sets the stage for GNI | • Multiple ways to deliver such as lecture, discussion, demonstration, practical exercises<br>• Not a passive learning activity | • Sharing of observations in terms of value and future utility | • Enables instructors to confirm students met the learning objective<br>• Not a test<br>• Should not be delayed |
| **Students** | • Involved<br>• Interact with classmates | • Reflect and answer open-ended questions related to the CE | • Actively listen, participate, and collaborate | • Reflect<br>• Share reactions<br>• Express value | • Apply knowledge in an activity that makes understanding transparent |
| **Instructors** | • Set up<br>• Observe<br>• Facilitate | • Facilitate discussion<br>• Don't lecture<br>• Use open-ended questions<br>• Use discussion to identify what students know | • Present, clarify, and collaborate with students<br>• Link back to CE<br>• Tailor approach to what the students know | • Facilitate discussion<br>• Use open-ended questions<br>• Don't express value for the students | • Use appropriate method to gauge understanding<br>• Provide feedback and revisit material as necessary |

In the following sections, we provide example activities that can help facilitate the different clouds of the ELM. For each section of the lesson, select a VL activity to encourage student participation and assess student learning. Choose an activity that fits the lesson for the day, the learning outcomes of the lesson, and the needs of your students. Table 5, as well as the previous section on best practices for VL, (i.e., VL Instructor Guide) provides example activities to choose from. Think of these learning step/activities (LSAs) or methods of instruction (MOIs) as potential ingredients for your lesson.

**Table 5.**

*Example Activities by Lesson Type and VL Tool (adapted from Virtual Activity Selection Grid[2])*

| Tool | Content/Memorization Focus | Conceptual/Application Focus |
|---|---|---|
| Audio & Video | • Material for a factual evaluation ("What did so and so do right/wrong?) | • Material for a case study or post-event review |
| Raise Hands | • Y/N questions<br>• Voting<br>• Assessing previous experience | |
| Chat | • Quick in-the-moment quiz to check understanding<br>• Questions for the instructor<br>• Exit tickets | |
| Whiteboard/Annotation | • Outlining a maneuver<br>• Creating a visual aid to support description/application | • Drawing the solution to a problem |
| Poll/Quiz | • Quiz to assess understanding<br>• Voting on fact-based information | • Voting on proposed solutions |
| Breakout Rooms | • Small group discussion or assignments | • Small group problem-solving |
| Screen sharing | • Scavenger hunt to find information (e.g., doctrine definitions)/answers to a problem | • Share solutions to problem-solving tasks<br>• Share maps, diagrams, etc. |
| Collaborative document | • Document brainstorming<br>• Written group project | |

*Note: All activities in the Content/Memorization Focus column could also be used in the Conceptual/Application Focus type lesson. For more activities, see Table 1.*

[2] https://www.cindyhuggett.com/archive/virtual-activity-selection-grid-2/

**Concrete Experience (CE)**

CEs trigger past experiences and knowledge to build connections, act as a hook to engage student interest and to promote perceived value, as well as provide a common, shared experience/example to ground the lesson.

1. Start with an ice-breaker type question:
    a. Why do you think it's important to talk about _____?
    b. What have your experiences been with _____?
        i. Encourage students to raise their hands or drop comments in the chat.
        ii. Students can also discuss in small groups in breakout rooms and then share with the entire class.

2. Follow-up with a CE
    a. E.g., video, a historical vignette, a practical exercise, a personal military experience, a demonstration, a picture, or a provocative quote.
    b. Make sure to frame the CE by asking students a question beforehand or telling them what they should watch out for.

**Publish and Process (P&P)**

Conduct a facilitated discussion/reaction to the CE to assess students' current knowledge and where to focus new instruction. Set ground rules for discussion in Day Zero and remind students of discussion expectations (conduct, modality used) before discussion. Allow and normalize students responding to one another. The CE can also be paired with ***polls*** (during the discussion) or other questions (could ask students to prepare answers before the class).

When using polls or recall type questions, follow up with open-ended questions requiring critical thinking/analysis and not only fact-based retrieval or yes/no questions (see example questions in Instructor Guide).

1. Discuss students' experience/knowledge with the CE and/or lesson topic from the day.
    a. Utilize chat and audio.
    b. Example questions:
        i. What is the difference between … and …?
        ii. How are … and … similar?
        iii. Could you give an example?
        iv. What is your reaction to…?
        v. What is the significance of …?

2. Quiz or Poll Students

a. This can be done by having students raise hands to vote for their answer, using the chat, using the poll feature with a pre-planned poll, or an online quiz software like Kahoot or MS Forms.
b. After the quiz or poll, provide feedback on why an answer is correct or dispel common misconceptions.

3. "Muddiest Point"
    a. Have students discuss what was the most confusing from the reading.

4. Discussion Board
    a. Post a question for students to respond to before class. Discuss their answers as a class before lecture.
    b. Another option is to assign students to come to class with a question prepared.
    c. You can also use asynchronous discussion boards to check understanding from the previous class.

**Generalize New Information (GNI)**

Teach new information and assess students' understanding regularly. There are many ways to convey new information, including lecture, collaborative board development, discussion, demonstration, practical exercises, simulation, etc. Where possible, tie content back to the CE.

1. Ask before telling
    a. When possible, ask students to tell you about the topic, from reading or their personal experiences. You can utilize the chat for this (get many responses simultaneously) or call on a few individual students. Fill in the gaps when needed. Students will be able to provide a lot of the information/content for the class. In the Common Faculty Development-Instructor Course (CFD-IC) they might have mentioned the 80/20 ratio, meaning that if instructors provide 20% of the content their students should be able to provide the remaining 80%. This might not always happen given your students' current understanding, but strive for this ratio (i.e., ask before telling).
        i. "What does doctrine say about that?"
        ii. "Where would we find that in doctrine?"
        iii. "How would you describe that in your own words?"
        iv. "Have you seen this before?"

    b. Utilize quick checks on learning (i.e., formative assessments).
        i. Ask whole-group questions or directly call on individual students to respond or ask questions. This can be done verbally or using the chat function.

ii. Integrate polls or pose open-ended questions for the chat when breaking from instruction. Review responses over the break and address them when class resumes or in the next class.

2. Vary instructional activities to maintain engagement.

3. Encourage students to ask questions. Set guidelines ahead of time whether you expect questions to be asked out loud, in the chat, or both.

4. If available, online whiteboards can be used to present, collaborate, or both (Campbell et al., 2019; Reguera & Lopez, 2021).
    a. Presenting Information:
        i. Instructor draws concepts and organizes information.
        ii. Students may copy, screenshot, or find these files in the class web-based learning management system (e.g., MS Teams channel).
    b. Collaboration:
        i. Students use whiteboard functions to share drawings, solutions, ideas, etc.
        ii. Students take notes from a collaborative discussion.

**Develop (DEV)**

The DEV cloud should enable students to express the value of the lesson material by connecting it to future needs/uses. Value should have been established throughout the entire lesson starting with the CE. The DEV cloud focuses on students articulating and sharing value through further reflection.

1. DEV can be integrated into ice breakers/CE to connect to the "why" behind instruction.
    - "Why might _____ be important?"
    - "What's the impact of not knowing this?"

2. DEV can be purposefully integrated into exit tickets or discussion boards.
    - "How will you use this in your next position?"
    - "What value do you see in this information?"

3. Additional DEV activities:
    - The answers to DEV questions can be recorded (by the instructor or student) on a shared, collaborative document such as Word Online or a whiteboard function and screenshared for the class.
    - Use breakout rooms for students to discuss DEV questions in groups of 2-6. The instructor can "visit" each room and reflect on the students' discussions.

## Apply

Apply is the final cloud of the ELM. However, simple assessments should be used along the way to facilitate student interactions and verify understanding following the lesson or before breaks. Apply is a way for the instructor to assess learning so that it can be better facilitated by providing additional guidance, clarification, etc. It is a feedback tool both for the students and the instructor and can be formative in nature. When applicable, tie the Apply activity back to the CE. Below we provide some example methods for implementing Apply.

1. End the lesson with a check on learning
    a. Practical exercises,
    b. Polls, or
    c. Exit tickets.
2. Discussion boards:
    a. Have the students respond to a discussion question at the end of the class.
    b. Students may also respond to their peers.

## Conclusion

Transitioning to teaching in VL environments presents opportunities and challenges. Where online technologies allow for innovative ways to interact and transmit information, VL courses require additional planning to ensure student success. Overall, the same elements that make traditional in-person courses successful are key to VL courses as well: creating meaningful connections between students, instructors, and content. In this Instructor Guide and Lesson Guide, best practices, recommendations, and sample activities are provided to instructors to implement in their VL classroom to support optimal learning outcomes.

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## Appendix

## Sample Module/Day Zero Syllabus

Course Title:
Semester:
Office/Meeting: [MS Teams link and/or physical location]

Instructor:
Email:
Office Hours: Thursdays 0900 - 1015

Day 0 Objectives:

1. Introductions
2. Orientation to the course: Expectations, technology, and timelines

**Online Guidelines**

When meeting in Microsoft Teams, your attendance, attention, and participation are counted upon. During our virtual learning (VL) class, you are encouraged to keep your microphone muted when you are not speaking and turn your video on at specified times. VL courses are professional settings. As such, dress and conduct should be the same as in an in-person class. Please minimize background distractions as much as possible. If any issues arise with sharing your video feed, following these guidelines, or anything else related to your use of Microsoft Teams or course-related technology, please notify me via email. I am happy to discuss accommodations given your prompt communication.[3]

You may be called on just like in an in-person class. If you are called on, please unmute and respond. This course may also utilize the chat feature. The purpose of the chat is to ask questions relevant to the course and, when prompted, to respond to instructor questions. The expectation is that chat comments be on-topic, respectful, and for the benefit of the group.

Our course MS Teams page is where you will find the syllabus, course resources, and turn in assignments. To turn in assignments, [email them to me at {address} with {TITLE_FORMAT}/access a turn in function by following ___ path]. Quizzes can be found on the Quizzes tab of the course home page.

This course uses online discussion forum to extend class dialogue. Participation is graded as follows: [specific breakdown of frequency of posts, points per post, etc. The discussion forum itself should also have an example question and response to model for students].

Please reach out to me by email should questions arise. I typically respond within __ hours.

**VL Essentials**

Link to course home page:
Link to course discussion forum, if applicable:

[3] This paragraph is based on the syllabus from Dr. Gargi Sawhney's Spring 2022 Occupational Health Psychology course PSYC 7760 at Auburn University. The paragraph was reprinted with permission.

Link to other software used in the course, if applicable:
Help desk website:
Help desk contact number:

**Module/Day 0 Activities**

Activity 1: Student Introductions.
Goal: Establish social presence and class communication norms
Options: Students share name, background, and optional icebreaker (or other information at instructor's discretion)

a. As a whole class
b. In groups of 4-6 and then share out names and
    a. The most specific thing all small group members have in common
    b. A solution to a problem/something the group is tasked to find consensus on

Activity 2: Get an idea of your students' relevant knowledge and experience
Goal: Tailor instruction/course content
Options:

a. Ask students to discuss their experiences with X in small groups
b. Ask a question about Y for the chat
c. Poll students about Z using poll feature or raise hands ("Who here has ___?")

Activity 3: Set the tone for future classes
Goal: Conclude the class, gain useful information for future classes, build rapport with students
Options: Ask (students leave responses in the chat or via a pre-created MS form)

a. What are you most looking forward to about this course?
b. What, if anything, in regard to this course are you apprehensive about?
c. What are you hoping to learn about ____?
d. What questions do you have after today's class?

After class: Ensure students understand course foundation
Goal: Make sure students are aware of key course elements and how to navigate the LE
Options:

a. Syllabus Quiz
b. First online discussion board post
c. Submit first assignment