

# Infrastructure Academy — Educator’s Guide

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A Teacher’s Companion to the Player’s Handbook V2

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Based on the trilogy by Nigel T. Dearden

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## About This Guide

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This Educator’s Guide is a companion document to the Infrastructure Academy Player’s Handbook V2 (291 pages, 30 chapters). It is designed for teachers, lecturers, and curriculum designers who wish to integrate the Infrastructure Odyssey into formal education settings. The guide translates the game mechanics of the Player’s Handbook into pedagogical frameworks, assessment rubrics, and classroom implementation strategies.

The Infrastructure Academy teaches civilisational literacy through an Advanced Dungeons & Dragons-inspired framework. Students journey through 12,000 years of human infrastructure development — from the mastery of fire to artificial intelligence — using systems thinking rather than memorisation. The core philosophy is captured in the tagline: “**Systems Thinking, Not Memorisation — The Journey IS the Work.**”

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## Part 1: Understanding the Framework

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### 1.1 The Three Game Modes as Educational Tiers

The Infrastructure Academy operates across three distinct modes, each designed for a different age group and level of academic supervision. Educators should select the mode that corresponds to their students’ developmental stage and the degree of structured guidance required.

Mode	Age Range	Supervision Level	Educational Context
<b>Explorer</b>	8–14	Freeform	Primary/Middle School — no login required, tap-to-discover, guest play, DAVID narrator guides exploration
<b>Flight Deck</b>	14–18	Semi-Supervised	Secondary/High School — cockpit HUD, Dearden Field matrix, DAVID co-pilot, XP tracking enabled
<b>Scholar</b>	18+	Fully Supervised	University/Professional — full academic rigour, thesis requirements, Master Weaver certification pathway

**Explorer Mode** is ideal for introducing younger students to infrastructure concepts through narrative discovery. There are no formal assessments; the AI narrator (DAVID) guides students through the 12 Relays using storytelling and interactive prompts.

**Flight Deck Mode** introduces structured learning with XP tracking, ability scores, and the IUMC (Investigate, Understand, Master, Control) progression framework. Teachers can monitor student progress through the dashboard while students retain significant autonomy in their learning pathway.

**Scholar Mode** is the fully academic tier. It includes thesis requirements, peer review, cross-relay analysis, and the Capstone Thesis leading to Master Weaver certification. This mode maps directly to university-level coursework and can be integrated into existing civil engineering, history, or interdisciplinary curricula.

## 1.2 The 12 Civilisational Relays

The backbone of the Infrastructure Odyssey is a chronological journey through 12 Civilisational Relays, each representing a transformative infrastructure technology. These relays form the curriculum’s content spine.

Relay	Title	Core Infrastructure	Key Engineering Disciplines
1	Fire	Energy mastery, settlement	Thermodynamics, materials science
2	Tree	Wood construction, agriculture	Structural engineering, forestry
3	River	Hydraulic civilisation, irrigation	Hydraulic engineering, water resources
4	Horse	Transport, warfare, trade routes	Transportation engineering
5	Roads	Road networks, empire building	Civil engineering, geotechnics
6	Ships	Maritime innovation, global trade	Naval architecture, navigation
7	Loom	Programmable logic, mass production	Computer science, manufacturing
8	Rail	Railway revolution, industrialisation	Railway engineering, economics
9	Engine	Combustion, energy transformation	Mechanical engineering, energy
10	AAA Triad	Automobile, Aviation, Airwaves	Aerospace, telecommunications
11	Orbit	Space infrastructure, satellites	Aerospace engineering, geopolitics
12	Human Nodes	Biotech, AI, digital networks	AI ethics, systems engineering

Each relay is examined through three civilisational perspectives — **Western** (discontinuous, built), **Eastern** (continuous, built), and **Outrider** (natural, bridging) — providing students with a genuinely global and multi-perspectival understanding of infrastructure development.

### 1.3 The FITS Temperament System

The FITS (Feeler, Intuitive, Thinker, Senser) system functions as a learning style diagnostic. Students complete an 8-question scenario-based assessment to discover their temperament. There are no wrong answers — the assessment determines how DAVID adapts its teaching approach.

FITS Type	Character	Learning Style	Ability Bonuses	Civilisational Role
Feeler	Empathetic	Emotional connection to history	+2 CHA, +1 WIS, +1 DEX	Ethical Harmonizer
Intuitive	Pattern-seeker	Sees connections across relays	+2 INT, +1 WIS, +1 CHA	Visionary Explorer
Thinker	Analytical	Data-driven, systematic	+2 INT, +1 STR, +1 CON	Logical Strategist
Senser	Practical	Hands-on, real-world application	+2 CON, +1 STR, +1 DEX	Practical Realist

**Pedagogical Note:** The FITS system is not a rigid classification. It serves as a starting point for differentiated instruction. DAVID uses the FITS result to adjust narrative tone, challenge difficulty, and the types of prompts presented. Educators should treat FITS as a conversation starter about learning preferences, not a permanent label.

## 1.4 The Six Ability Scores

Adapted from the classic D&D framework, the six ability scores map directly to academic competencies relevant to infrastructure education.

Score	Full Name	Academic Competency
STR	Engineering Insight	Physical and structural understanding of infrastructure
DEX	Adaptive Thinking	Flexibility in problem-solving, lateral connections
CON	Research Stamina	Persistence, depth of investigation, endurance
INT	Analytical Precision	Data interpretation, pattern recognition, logic
WIS	Historical Judgement	Contextual understanding, ethical evaluation
CHA	Communication Impact	Persuasion, presentation, collaborative leadership

Students roll dice (4d6 drop lowest) to generate their initial scores. The critical pedagogical principle here is stated explicitly in the Handbook: **“Dice outcome = 0% of your grade. Rolling high or low does not determine your success — it determines the scenario DAVID creates for you.”** This means every student receives appropriately challenging content regardless of their dice rolls.

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## Part 2: Classroom Implementation

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### 2.1 The 15-Week Semester Structure

Chapter 18 of the Player's Handbook provides a complete 15-week semester plan for supervised (classroom) mode. This structure maps directly to a standard university semester and can be adapted for secondary school terms.

Week	Focus	Activity	Deliverable
1	Induction: The Call to Weave	AD&D mechanics, Civilisational Races	Character Creation
2	Relay 1: Fire	Harnessing fire, settlement	Sage + Builder Path
3	Relay 2: Tree	Wood in tools, shelter, transport	Sustainable resource use
4	Relay 3: River	Rivers, agriculture, urban development	River civilisations case study
5	Relay 4: Horse	Domestication, transport, warfare	Steering evolution reflection
6	Relay 5: Roads	Road networks, empire building	Roman vs modern analysis
7	Relay 6: Ships	Maritime innovation, global trade	Global interconnectedness
8	Relay 7: Loom	Programmable logic, mass production	Automation discussion
9	Relay 8: Rail	Railway revolution, industrialisation	Economic geography impact
10	Relay 9: Engine	Combustion engine, energy	Environmental impact
11	Relay 10: AAA Triad	Transport, air, wireless	Global village analysis
12	Relay 11: Orbit	Space age, satellites	Geopolitics of space
13	Relay 12: Human Nodes	Biotech, AI, ethics	Human enhancement debate
14	Post-Campaign Synthesis	Full Odyssey synthesis	Master Weaver Portfolio
15	Award Ceremony	Presentation and certification	Certificates awarded

**Adaptation for Secondary Schools:** For a 10-week term, combine Relays 1–2, 3–4, 5–6, 7–8, 9–10, and 11–12 into paired weeks, with Week 1 for induction and Weeks 9–10 for synthesis and

awards. The Explorer and Flight Deck modes are designed to accommodate this compression.

**Adaptation for Intensive Workshops:** For a 3-day or 5-day intensive, select 4–6 relays that align with the workshop theme (e.g., Relays 5, 8, 9, 10 for a transport engineering focus) and use Explorer mode for rapid discovery.

## 2.2 The IUMC Progression Framework

Each relay follows the IUMC (Investigate, Understand, Master, Control) framework, which maps to Bloom’s Taxonomy as follows:

IUMC Stage	Bloom’s Level	Student Activity	Assessment Type
<b>Investigate</b>	Remember / Understand	Discovery, exploration, reading	Quiz, observation log
<b>Understand</b>	Apply / Analyse	Cross-relay connections, comparisons	Written analysis, discussion
<b>Master</b>	Evaluate	Critical assessment, debate	Essay, presentation
<b>Control</b>	Create	Thesis, original synthesis	Capstone project, portfolio

The IUMC framework ensures that students progress from surface-level discovery to deep analytical synthesis. DAVID tracks each student’s IUMC progress across all 12 relays and adjusts prompts accordingly.

## 2.3 Assessment and Grading

The Infrastructure Academy uses a multi-layered assessment system that combines game mechanics with academic rigour.

### XP Formula (Scholar Mode):

$$\text{Total Chapter XP} = (\text{Base Learning XP} + \text{Discovery XP} + \text{Governance Insight XP} + \text{DAVID Merit XP}) \times \text{Mode Bonus}$$

The XP cap is 24,000,000. XP is earned through relay exploration, discovery, quiz completion, DAVID engagement, thesis work, and daily streaks.

### Academic Levelling System (Chapter 17):

Tier	Levels	Academic Competency	Equivalent
Student	1–4	Foundation — basic understanding of infrastructure concepts	Introductory coursework
Scholar	5–8	Intermediate — cross-relay connections and analytical thinking	Advanced undergraduate
Master	9–12	Advanced — synthesis, thesis work, and original analysis	Postgraduate level

**Progression from Spider (Level 0) to Master Weaver (Level 12)** mirrors the academic journey from novice to expert. Each level requires demonstrating increasingly sophisticated understanding across multiple relays.

**Daily Streaks (Chapter 24):** Consistent engagement is rewarded with escalating XP bonuses, reinforcing the discipline that mirrors real engineering practice.

Streak	Bonus	Title Earned
3 days	1.1x XP	Thread-Spinner
7 days	1.25x XP	Web-Weaver
14 days	1.5x XP	Pattern-Keeper
30 days	2.0x XP	Master Strand
60 days	2.5x XP	Eternal Weaver

## 2.4 The Capstone Thesis (Chapter 23)

The Capstone Thesis is the culminating assessment for Scholar-mode students seeking Master Weaver certification. It requires genuine academic synthesis.

### Thesis Requirements:

- Minimum 3,000 words (recommended 5,000–8,000)
- Must reference at least 8 of 12 relays
- Must connect at least 3 of 5 Great Webs
- Must address at least 2 Perennial Threats
- Must include SDG (Sustainable Development Goals) alignment analysis
- Must demonstrate cross-relay pattern recognition

**Relay Thesis Prompts (Chapter 22):** Each relay includes a specific thesis prompt and awards a badge upon completion.

Relay	Thesis Prompt (Summary)	Badge
Fire	Energy and civilisation — how does the first relay echo today?	Fire Philosopher
Tree	Transition from outrider to settled life — foundations of infrastructure	Root Thinker
River	Writing, law, governance — born from managing water	River Sage
Horse	Three modes of civilisation from one animal	Steppe Scholar
Roads	Roads built and destroyed empires — lessons from Roman engineering	Road Builder
Ships	Maritime infrastructure: engineering brilliance vs colonialism	Navigator's Voice
Rail	Railway compressed time and space — transport and the concept of time	Iron Horse Thinker
Loom	Jacquard loom to computing — understanding the digital lineage	Pattern Weaver
Engine	Godlike power over distance at what cost?	Engine Philosopher
AAA Triad	Which of the three had the greatest impact?	Triad Analyst
Orbit	Invisible space infrastructure in daily life	Orbital Thinker
Torus	Synthesis of all 12 relays — vision for civilisation's future	Torus Visionary

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## Part 3: Curriculum Alignment

### 3.1 Subject Integration

The Infrastructure Odyssey is inherently interdisciplinary. The following table maps each relay to traditional subject areas, enabling educators to integrate the game into existing curricula.

Relay	Engineering	History	Geography	Science	Ethics/Philosophy
Fire	Thermodynamics	Prehistoric settlement	Climate zones	Chemistry of combustion	Prometheus myth
Tree	Structural engineering	Agricultural revolution	Deforestation	Botany, materials	Sustainability
River	Hydraulic engineering	Ancient civilisations	River systems	Hydrology	Water rights
Horse	Transport engineering	Steppe empires	Eurasian geography	Animal science	Warfare ethics
Roads	Civil engineering	Roman Empire	Trade routes	Geology, materials	Empire and colonialism
Ships	Naval architecture	Age of Exploration	Ocean currents	Navigation, astronomy	Colonialism, slavery
Loom	Computer science	Industrial Revolution	Textile regions	Mechanics, computing	Labour rights
Rail	Railway engineering	19th century	Economic geography	Steam power, metallurgy	Social displacement
Engine	Mechanical engineering	20th century	Oil geography	Thermodynamics	Climate change
AAA	Aerospace, telecomms	Modern era	Globalisation	Electronics, aerodynamics	Privacy, surveillance
Orbit	Aerospace engineering	Cold War, space race	Satellite coverage	Orbital mechanics	Space governance
Human Nodes	AI, biotech	Contemporary	Digital divide	Neuroscience, genetics	AI ethics, transhumanism

### 3.2 UN Sustainable Development Goals Alignment

The Capstone Thesis requires SDG alignment analysis. The following mapping assists educators in connecting relays to specific SDGs.

SDG	Most Relevant Relays	Connection
SDG 6: Clean Water	River, Roads	Hydraulic infrastructure, water distribution
SDG 7: Affordable Energy	Fire, Engine, Orbit	Energy mastery across 12,000 years
SDG 9: Industry & Infrastructure	All 12 Relays	The entire curriculum
SDG 11: Sustainable Cities	River, Roads, Rail, AAA	Urban infrastructure evolution
SDG 13: Climate Action	Engine, AAA, Orbit, Torus	Environmental impact of infrastructure
SDG 17: Partnerships	Ships, Loom, Human Nodes	Global trade, digital connectivity

### 3.3 Biomimicry Connections (Chapter 8)

The Handbook contains 67 biomimicry connections linking natural systems to engineering solutions. These provide rich material for cross-curricular science and engineering lessons. Examples include neural networks (brain), swarm intelligence (ants/bees), genetic algorithms (evolution), self-healing systems (biology), planetary homeostasis (Earth systems engineering), and ecosystem resilience (adaptive infrastructure).

### 3.4 Technical Specifications (Chapter 28)

Each relay includes hard engineering data — dimensions, materials, capacities, and performance metrics drawn from historical and archaeological sources. This data supports quantitative analysis assignments.

Relay	Example Specifications
Fire	Hearth temp: 600–900°C; Charcoal kiln: 1,100°C; Bronze smelting: 1,083°C
River	Nile flood: 8,500 m <sup>3</sup> /s; Tigris irrigation: 30,000 km of canals
Horse	Horse speed: 55 km/h; Chariot range: 100 km/day; Yam relay: 200 km/day
Roads	Roman road width: 4.2m; Via Appia length: 563 km; Gradient: max 8%
Rail	Stephenson gauge: 1,435mm; Rocket speed: 48 km/h; Mallard: 203 km/h
Engine	Watt engine: 10 hp; Model T: 20 hp; Modern turbine: 1,000 MW

## Part 4: DAVID — The AI Dungeon Master

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### 4.1 What DAVID Does

DAVID (Digital Adaptive Virtual Infrastructure Dungeon-master) is the AI guide that adapts to each student's learning style. Understanding DAVID's capabilities helps educators set appropriate expectations and leverage the AI effectively.

#### DAVID's Core Capabilities:

- Adapts narrative style to the student's FITS temperament
- Adjusts challenge difficulty based on ability scores
- Provides historical context and engineering insights
- Awards Merit XP for quality analytical responses
- Manages the student's party of AI companions
- Tracks IUMC progress across all relays
- Recommends grades in semi-supervised mode

### 4.2 The Four AI Companions (Chapter 20)

Each student is accompanied by four AI companions that represent different analytical perspectives. These companions model collaborative problem-solving and ensure students never face a challenge alone.

### 4.3 Educator's Role Alongside DAVID

In **Explorer Mode**, the educator's role is minimal — DAVID handles narrative guidance. In **Flight Deck Mode**, the educator monitors progress through the dashboard and intervenes when students need human support. In **Scholar Mode**, the educator is the primary assessor, with DAVID providing recommendations and data.

The key principle is that **DAVID handles the data; the educator handles the wisdom**. DAVID can track XP, monitor engagement, and adjust difficulty, but it cannot replace the human judgement required for thesis evaluation, ethical discussion facilitation, and pastoral care.

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## **Part 5: Special Equipment and Resources**

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### **5.1 The 36 Special Equipment Items (Chapter 7)**

The Handbook includes 36 special equipment items distributed across all 12 relays. These items serve as learning tools — each one unlocks specific content, provides ability bonuses, or enables new types of analysis. Educators can use equipment acquisition as milestone markers for student progress.

### **5.2 The 91+ Inventions (Chapter 9)**

The Invention Codex catalogues over 91 inventions spanning from the earliest controlled fires (Relay 1) through Roman aqueducts (Relay 5), the Jacquard loom’s programmable cards (Relay 7), to artificial intelligence and brain-computer interfaces (Relay 12). Each invention connects to at least one relay and one engineering discipline, providing material for research assignments and class presentations.

### **5.3 The Threat Codex — Monsters and Bosses (Chapter 19)**

Infrastructure threats are gamified as “monsters and bosses” that students must overcome. These include natural disasters, political instability, resource depletion, technological obsolescence, and ethical dilemmas. The Threat Codex provides scenario-based learning opportunities where students must apply their knowledge to solve real-world infrastructure challenges.

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## **Part 6: The Seven Zeniths and the Outrider Legacy (Chapter 26)**

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The Seven Zeniths trace the history of Outrider civilisation — from the Scythians (800 BCE) through the Mongol Empire to the Digital Outrider of the modern era. This chapter provides rich material for historical analysis and debates about the relationship between built and natural civilisation.

The seven historical Outrider civilisations covered are: Scythians (800–300 BCE), Xiongnu (300 BCE–100 AD), Sarmatians (500 BCE–400 AD), Huns (400–500 AD), Gokturks (600–800 AD), Khitans (1000–1200 AD), and the Mongol Empire (1200–1400 AD). Each is examined for its impact on settled civilisation and its lessons for modern infrastructure thinking.

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## Part 7: Technology Adoption Lags (Chapter 27)

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Chapter 27 introduces the concept of Technology Adoption Lags — the time between a technology’s invention and its widespread adoption. This framework reveals an exponential compression pattern that provides excellent material for mathematical modelling and data analysis exercises.

Technology	Adoption Lag
Fire	~1,000,000 years
Writing	~3,000 years
Printing	~400 years
Steam	~100 years
Electricity	~50 years
Internet	~20 years
Mobile	~10 years

**Classroom Activity:** Have students plot these adoption lags on a logarithmic scale and extrapolate the curve to predict adoption timelines for emerging technologies (quantum computing, fusion energy, brain-computer interfaces). This exercise integrates mathematics, history, and engineering forecasting.

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## Part 8: Scoring Epochs and Fair Play (Chapter 30)

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The Scoring Epochs system ensures equitable assessment across different cohorts. As the platform evolves and content expands, the scoring algorithm adjusts to maintain fair XP distribution for all students regardless of when they enrolled.

Epoch	Label	Period	Discovery Pool
0	Pre-Bridge (Original)	1 Jan – 25 Feb 2026	247 items
1	Post-Bridge (Expanded)	25 Feb 2026 – present	441 items

Early adopters benefit from discovery bonuses, while later students benefit from refined content and expanded learning pathways. The algorithm normalises scores across epochs so that a Level 8 student from any era represents the same depth of understanding.

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## Appendix A: The Master Weaver's Oath

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The culmination of the Infrastructure Odyssey is the Master Weaver's Oath, recited upon achieving Level 12 certification:

*I have journeyed through 12,000 years of human ingenuity. I have learned from Fire to Human Nodes. I understand that civilisation is not a machine to be conquered, but a symphony to be orchestrated.*

*I commit to:*

- *Share this knowledge with others.*
- *Help awaken consciousness in fellow architects.*
- *Design systems that serve life.*
- *Build infrastructure for a sustainable future.*
- *Become a node in the network of collective intelligence.*

*I am a Master Weaver. I do not rest — I orchestrate.*

*— The Master Weaver's Oath*

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## Appendix B: Quick-Start Checklist for Educators

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1. **Read the Player's Handbook V2** — all 30 chapters (291 pages)
  2. **Choose your mode** — Explorer (8–14), Flight Deck (14–18), or Scholar (18+)
  3. **Map to your curriculum** — use the Subject Integration table in Section 3.1
  4. **Run Character Creation** — Week 1 activity; students roll dice, choose perspective, take FITS assessment
  5. **Follow the 15-Week Semester Structure** — or adapt for your term length
  6. **Monitor IUMC progress** — ensure students advance through Investigate → Understand → Master → Control
  7. **Assign Relay Thesis Prompts** — use Chapter 22 prompts for formal assessment
  8. **Facilitate the Capstone Thesis** — Scholar-mode students synthesise all 12 relays
  9. **Award Certification** — Master Weaver certificates for students who complete all requirements
  10. **Access the Platform** — visit [infra-acad-kugzaex2.manus.space](https://infra-acad-kugzaex2.manus.space)
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## Appendix C: Companion Materials

Document	Description	Access
Player's Handbook V2	Complete 30-chapter game manual (291 pages)	Download from 8th Scholar page
Vehicle Card Deck	33 infrastructure vehicles, artwork + specifications (66 pages)	Download from 8th Scholar page
Press Kit 2026	Media pack with project overview and key facts (9 pages)	Download from Resources page
DCSN Database Audit	Master audit of all project data, Block 378	Available on request

### BETA POC — Play at your own risk

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