



Renéal International Education Outreach, Inc.

LOW COST COMPUTER SYSTEM

***TRANSFORMING LIVES
THROUGH TECHNOLOGY
AND EDUCATION***

www.reneal.org

Renéal is a United States 501(c)(3) public charity. FEIN 45-5439085

Project Attributes

Low-cost – uses donated, used laptops (no hard disk or battery) and free, legal software

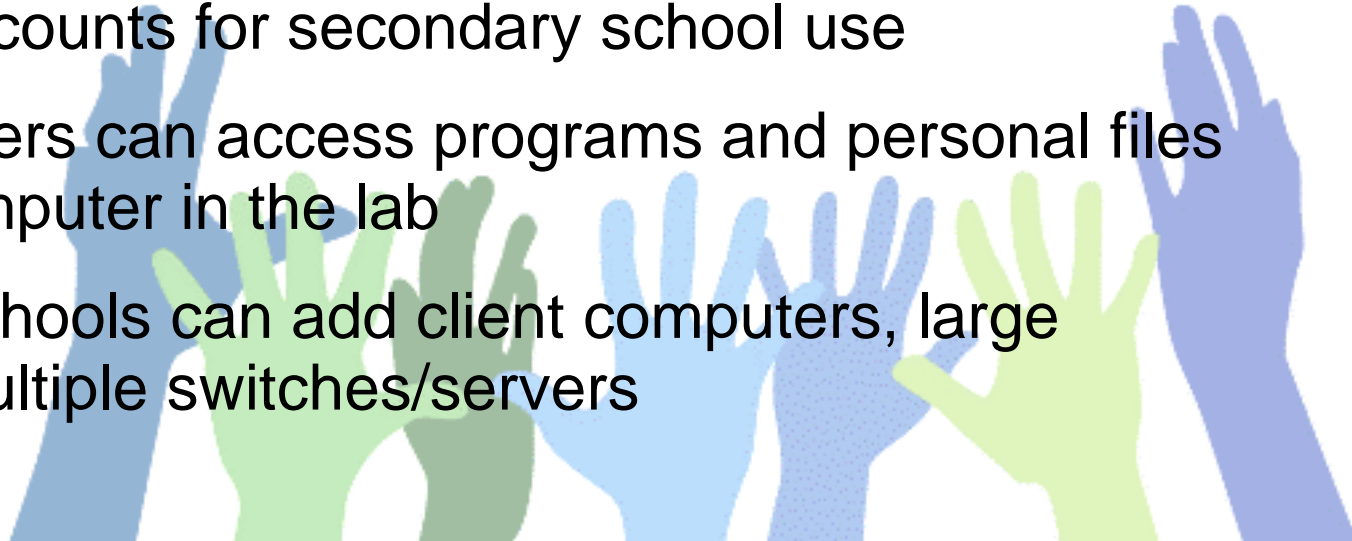
Low maintenance – no viruses, all software and educational content stored on a single server computer

“Turn-key” – computer lab is easy to set up and use



Advantages of Reneal System

- Minimal maintenance:
 - ✓ All software and files are on the server, no costly and time consuming client upgrades
 - ✓ Free, legal software with **no virus hassles**
 - ✓ Improved reliability since clients don't need a hard disk or local software
 - ✓ Built-in diagnostic and repair program, automated backups
- Low cost: client computers can be older model laptops
- Tailored environment: educational resources and teacher/student accounts for secondary school use
- Central access: users can access programs and personal files from any client computer in the lab
- Easy scalability: schools can add client computers, large schools can run multiple switches/servers



System Design

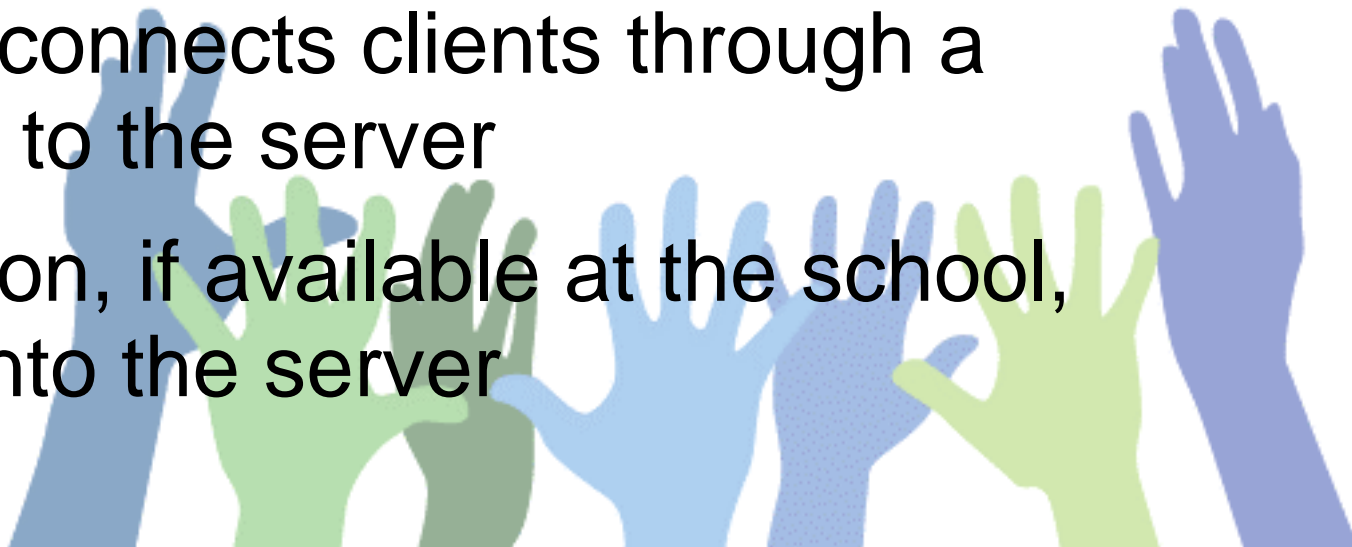
Uses Linux and Open Source Software plus freely available educational content

Client-server architecture, with all programs running on the server

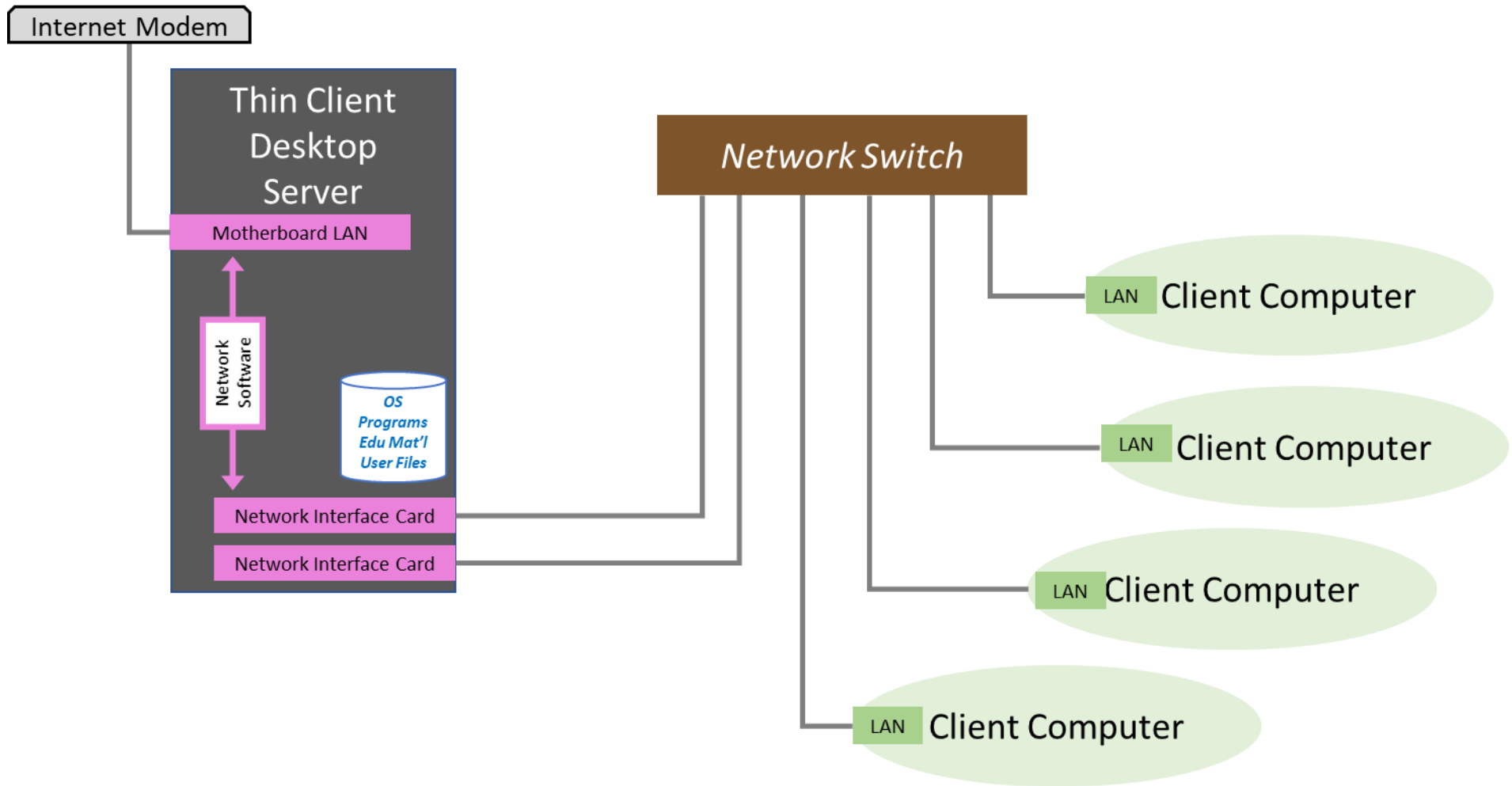
Usually start with 20 seats, with capacity to expand up to about 40 seats

Network cabling connects clients through a network switch to the server

Internet connection, if available at the school, plugs directly into the server



Low-Cost Computer Architecture



Server Specifications

Minimum 4-core CPU with integrated graphics (for example: AMD Ryzen 3 3200G or Intel i3-10105)

16 GB RAM

1 TB Enterprise class internal hard drive

1 TB User class internal hard drive

2 Gigabit network interface cards



Client Minimum Specifications

i-series processor

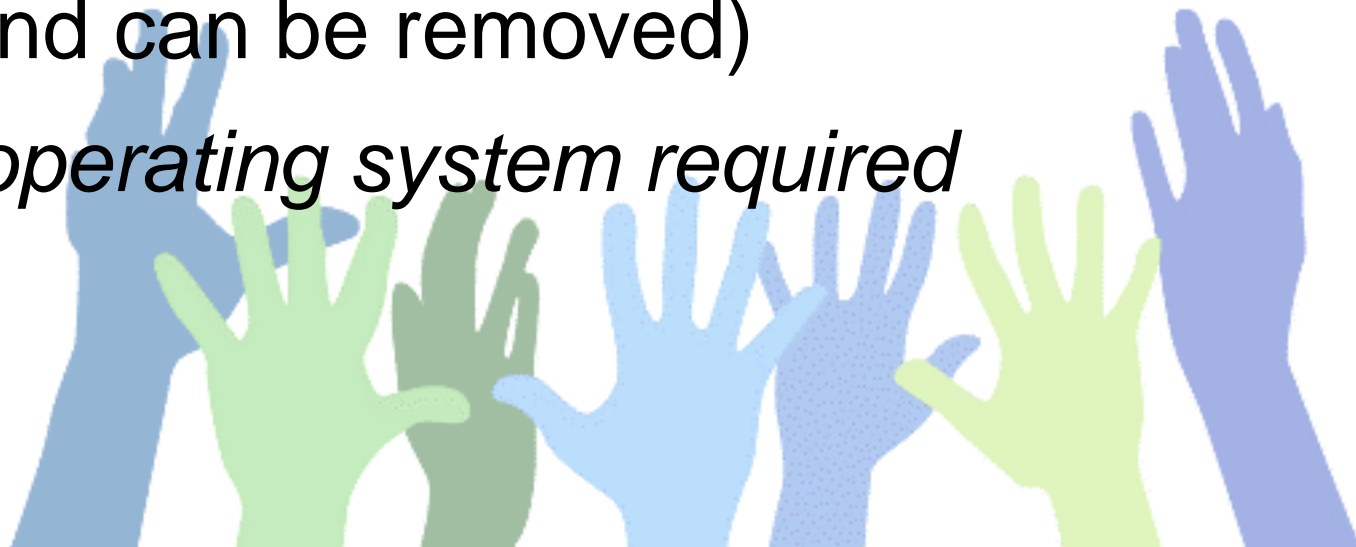
Minimum 1 GB RAM

Working display, keyboard, and LAN connection

Network boot capability

AC adapter power cord (battery does not need to be functional and can be removed)

No hard disk or operating system required



System Design

Three levels of user accounts for security and ease-of-access to personal files

System administration: for sysadmin functions only

Teacher: personalized, password-protected account

Student: personal folder for file storage

Custom software for server configuration, accounts management, and internet control (filtering and blocking) if internet is available

Reneal's entire system can be shared with a USB hard drive and used to easily create new servers



Renear Server Content

Computer applications:

- Word processor, spreadsheet, presentation
- Photo/video/audio editing, desktop publishing
- Webpage development, programming

Off-line educational content:

- Wikipedia
- Tanzania National exams
- Tanzania curriculum notes
- Science and math simulations
- Khan educational videos (English and Kiswahili)
- Textbooks and literature
- Computer tutorials
- Typing training
- Many others...



User Features

Epoites classroom management program so teacher can monitor student work or share their screen to students

Shared video streaming capability

TeachersShared and AllUsersShared file storage areas for permission-controlled content sharing



School Preparation

What Reneal provides

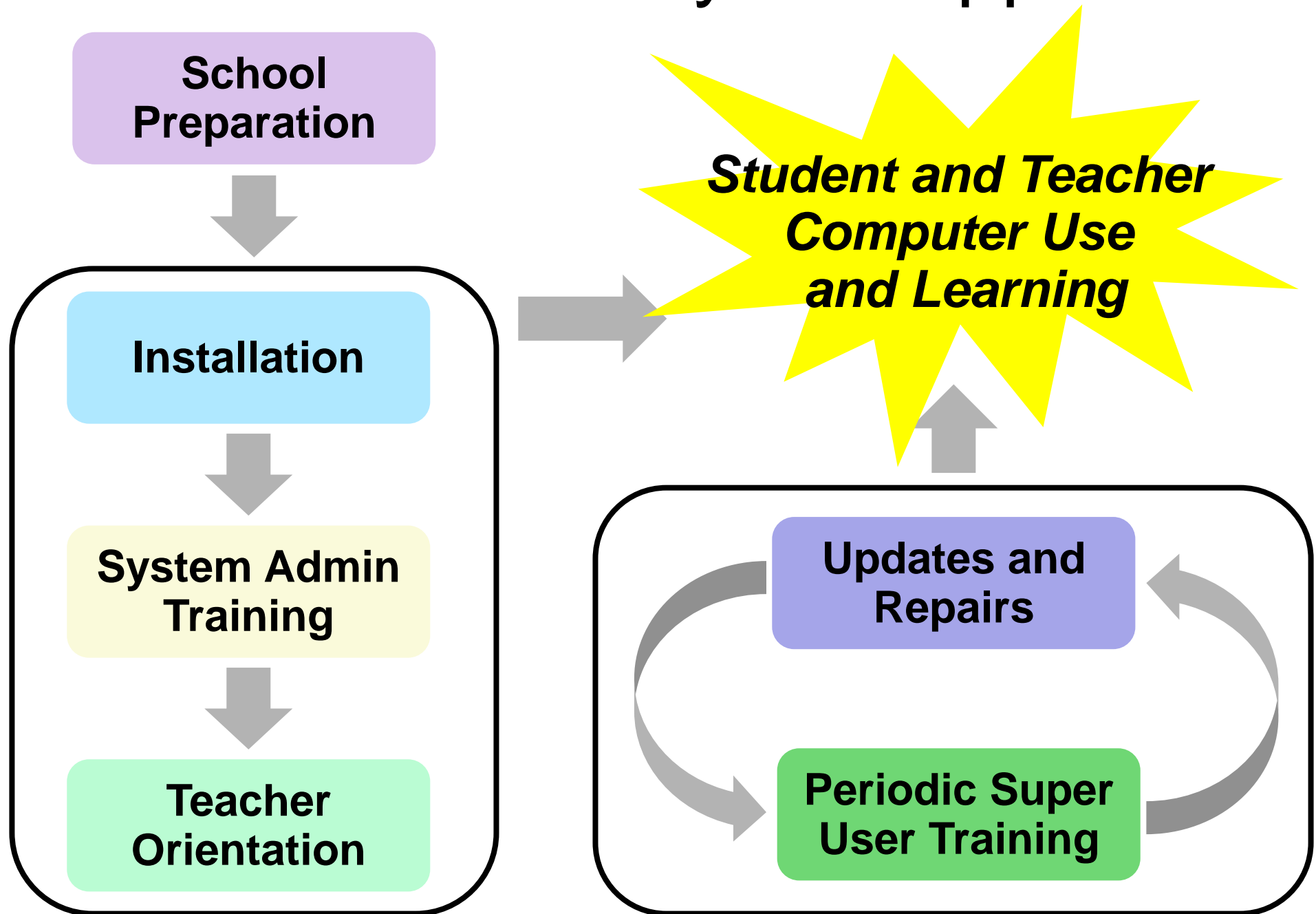
- Powerful server computer
- Gigabit network switch
- Up to 20 used computers
 - ✓ Laptop, adapter, and mouse
- Network cable/connectors
- UPS and voltage stabilizer
- Power extensions
- Shipping costs
- Training and orientation
- On-going support

What School provides

- Classroom for lab
- Computer teacher(s)
- Security (window grills, heavy door, locks)
- Tables for computers
- Chairs for students
- Electricity outlet(s)
- ***Commitment to use and care for the system***



Renewal Life Cycle Support



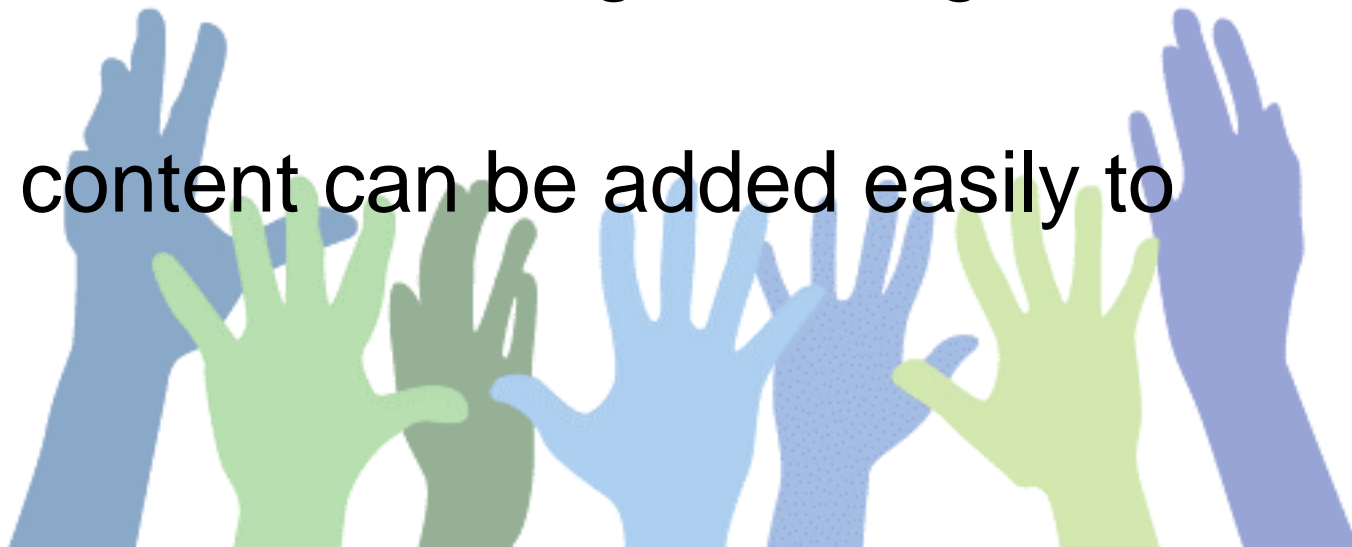
Sustainability Features

Tutorial videos and slide decks for System Administration, Teacher Orientation, student/teacher users

Renewal System Administration Manual

Trained technicians for maintenance and training and a School Liaison for strategic management and monitoring

New educational content can be added easily to the server



Sustainability Features

Automatic backups

Built-in diagnostic, troubleshooting, and repair program “systemCheck”

Built-in system performance data collection for metrics, monitoring, and provisioning

VPN for remote maintenance when internet is available

