University of Missouri

VIMAN Lab
VIRTUALIZATION, MULTIMEDIA AND NETWORKING LAB

Evaluating Impact of an Online Self-Service Learning Platform for Application-Inspired Cloud DevOps Curriculum

Roshan L Neupane (Presenter), Kiran Neupane, Hemanth Sai Yeddulapalli, Prof. Prasad Calyam
Department of Electrical Engineering and Computer Science
University of Missouri-Columbia

Metrics 2023

Mizzou Cloud DevOps Platform Overview

- Join the platform through your GitHub account
- Learners can choose from a set of courses
- Learners can check progress of their work and return to their last progress
- The modules follow a progression of starting from introductions and basics for these technologies to performing more technical contents
- Learners are able to implement a **research-inspired** use case scenario

The platform is accessible from https://www.mizzoucloudevops.net

Instructors view of user access request

- The instructors are able to view the list of students that are requesting access and grant them
- Description about the users are shown in the user requests panel
- There are options for admin privileges or assigning roles
- Instructors can view the students accessing a course and have the option to remove a request

Student Home Page

- Students land into the home page for the courses available in the LMS system
- There are diverse cloud and devops tools listed with Keywords that emphasize the learning outcomes
- Student can view details of the course that lands them in the upcoming page

Knowledge Levels

- The gold standard mentions strategic knowledge about the course with **contextual and conditional** knowledge
- The silver standard mentions **subject-specific skills and algorithms** knowledge and ability to determine when to use appropriate procedures
- The bronze acknowledges the **terminology**, details and elements, **principles and generalizations of theories**, models, structures

GOLD

- strategic knowledge
- knowledge on cognitive tasks including contextual and conditional knowledge
- self-knowledge

SILVER

- knowledge of subject-specific skills and algorithms
- knowledge of subject-specific techniques and methods
- knowledge of criteria for determining when to use appropriate procedures

BRONZE

- knowledge of terminology and knowledge of classifications and categories
- knowledge of specific details and elements
- knowledge of principles and generalizations
- knowledge of theories, models, and structures

Student assessment via Auto-grading API

- Students initially are assessed via **pre-survey** questions before course begins
- Students complete the course and are directed to technical assessment page
- The assessment consists of 3 **pre-survey** questions and 10 **post-completion technical assessment** questions for determining the knowledge levels and eventually the **knowledge growth**

Student Progress

- Description about the Progress is shown in all the courses
- Learners can also assess their Knowledge Levels looking at the tiers that they are assigned
- These help assess the Knowledge Growth in students and provides directives for improvement

Knowledge Growth Evaluation

- Workshops were conducted totaling 122 students for the first module relating to Kubernetes
- Knowledge growth is evaluated by comparing knowledge level after a post pre-survey with the post technical assessment
- It can be noticed that there have been significant improvement from the students

$$Score\% = \frac{SumofPoints}{TotalNumberOfPoints} \times 100$$

Gold medal - 90% and above

Silver medal - 70% and above

Bronze medal - 50% and above

Descriptive telemetry on the student enrollments – Instructor view

- The status of student enrollment is shown
- Instructors can filter the visualization with the courses available and check the enrollment status

Knowledge Levels and Peer Ranking – Instructor view

- Assessments are shown based on the class scores, student rankings
- Student averages for the assessments, their min-max and average
- Student rankings are sorted through scores and there are awards assigned based on the Knowledge Growth Study

LinkedIn Integrations

- We have newly created a dedicated LinkedIn site for Mizzou Cloud & DevOps for improving the learner outreach

- We have integrated with LinkedIn for providing students credentials (certificates/badges) based on their lab completion using the portal

- Student can directly share the credentials to LinkedIn from the portal using the link given to post the credentials in 2 ways: (a) Open credential without verification id, and (b) Credential with verification id

Digitally Verifiable Credentials

Certificate Validation by CERI Center at Mizzou (similar to how AWS does)

THANK YOU!

ANY QUESTIONS?