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***Abstract—***This content track project is an effort to solve instructional issues facing my own k12 school situated in rural north India. To approach this problem, I am proposing a hybrid classroom where technology will be used for content delivery and to facilitate outside class activities. Course content will be prepared for Biology Class 10 students aligned with Indian School Board (CBSE/ISCE/State Board).

# PROBLEM STATEMENT

This project is about my workplace (inefficient classroom practices in k12 school), being a remote area we still use normal white boards, teachers standing in the front; writing on board or explaining the chapter content orally. Students must make a note of what the teacher says so overall one way communication from the instructor side and very little opportunity for students to reflect on their learning or to create something by applying the knowledge in new situations. Teachers lack knowledge of adequate teaching strategy (Protiva, 2023; Beena et al., 2023). Sometimes even the teachers are absent (Krishna et al., 2010; Prema et al., 2018) at frequent intervals that hampers learning in a big way. Objective of this project is to repurposing content through the addition of interactive elements (multimedia) integrated into learning management systems (LMS) to facilitate two way communication and hence derive some value in terms of learning effectiveness, creativity, and critical thinking among students. Doing so efficiently in terms of time and resources, however, presents a considerable challenge. This content track project demonstrates a possible solution.

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# PRIOR WORK (Summary Of Past Weeks)

Project was started with the objective of improving online learning for k12 students with limited resources (in terms of computing), initially focus was given on two streams; a) First, teachers’ preparedness to take online classes effectively, research in this direction led to finding of frameworks like TPACK, T-STEM, CAFE etc. (Isha et al., 2022; Kennedy et al., 2014). b) Second, search for best possible instructional strategies/pedagogies that may enhance student’s learning in an online environment and also easily incorporated to available e-learning platforms or learning management systems.

In the process I realized that teachers’ training about technology use (as discussed in above mentioned frameworks) can be given by facilitating few webinars and hands-on training at the initial phase and so looking at the importance of instructional strategies, I put the rest of time exploring the second stream in my project. Few terms coined in this direction through the available research like active learning situated in real world problems, collaboration, peer-discussion, learner-centeredness and constructivism (Leanna et al., 2022; Chen et al.,2018; Vineeta et al.,2022). In this stage, it was clear that technology enhanced and multimedia(Denis, 2014) enabled course contents improves the motivation and engagement of students (Sun et al., 2008; Kennedy et al.,2014; . Kevin et al.,2015; Alison et al., 2020).

Having understood the importance of E-learning tools and appropriate pedagogies, the next objective was to explore how we can infuse creativity, problem solving and critical thinking skills (21st century skills), or in other words the Higher Order Thinking (as mentioned in Bloom’s taxonomy) among students in online learning environments. Research suggests that e-learning platforms with proper pedagogies may facilitate these skills (Eniko et al., 2021; Yalcinalp et al., 2019; Li et al., 2022; Chang, 2013).

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# OUTLINE

As discussed in the proposal part (with minor modifications), the course content has been divided into four main sections. Then each section contains relevant lectures and quizzes. Since the course contents have been developed keeping a constructionist approach where students can collaborate, communicate and create; so the last section has been developed as project based or enquiry driven learning.

Final outline can be seen in following Link:

[HIP-JOINT.pdf](https://drive.google.com/file/d/1jHVwGBROxvbkKR-KjicPjDBZ-tlx555v/view?usp=sharing)

# FINDINGS & RESULT (In Progress)

In the last few weeks, while working on LMS I have been able to distinguish what tools may be suitable for what subjects and how we can modify them to achieve our objective of active learning. For example, I started content design on Udemy but in the process I thought that it may not be as useful for school kids as it is for adult learning. Reasons are lack of collaborative work options and no option to call for live lectures. Even group formation tools are also missing and there is no inbuilt topic wise discussion thread. I moved to Canvas while finalizing the course contents and its integration with Canva offers interactive multimedia lessons that are quite suitable for school kids.

In terms of content, research suggests that along with multimedia content, project based learning is a great approach to facilitate team work, problem solving skills, and critical thinking. So in the last part of content design, I placed an activity where kids will summarize their learning and based on previous learning they will create/design similar study.

# NEXT STEP

As a next step, my objective is to further refine the section and put additional materials that may help students in understanding medical terms used in lectures (more resources relevant to ligaments, nerves etc). I will also research more on project based activity that is feasible given the time constraint and offer more resources as guidance. Along with refining the course contents I would also set up survey questionnaires that will show how students perceived the contents after post-test.

# VIDEO LINK