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A STUDY ON PREFERENCE FOR EITHER ONLINE EDUCATION COURSES OR TRADITIONAL ONES AT TURIN POLYTECHNIC UNIVERSITY IN TASHKENT

Abstract. The study investigated the effectiveness and efficiency of online courses compared to traditional classroom learning among undergraduate STEM students at TTPU. Findings indicate that while online learning offers significant flexibility and moderate academic improvements, it cannot fully replace traditional classroom methods, especially for hands-on STEM education.

Keywords: Online courses, YouTube, Khan Academy, Udemy, STEM, Covid, Online Platforms.

Introduction. Since the Covid-19 lockdown, higher-educational institutions around the world have seen a massive transformation and unprecedented shift from traditional teaching, that is, face-to-face meetings on campus, to online ones. Turin Polytechnic University in Tashkent (TTPU) was not an exception. Classrooms were replaced with live or recorded educational videos uploaded on the university's online platform. And with the abundant choices of education courses already available on YouTube, Coursera, Khan Academy, TTPU students have experienced a taste of learning subjects from the comfort of their home or off-campus surroundings since 2020. Even though the pandemic outbreak has long gone, its impact on delivering online courses goes in pair with traditional ones now. Completing online courses as a self-study activity or conducting lessons via Zoom calls has been a big part of the learning experience in Uzbekistan. The goal of this study is to collect that students' experience and better understand the effective and efficient ways of teaching and if that physical attendance can be transformed into a hybrid model that combines both online and in-person education. Hence, the researchers focus on (1) what area in traditional teaching should be transformed to online teaching and vice-versa, and (2) what way of teaching is easier to perceive and retain information.

Literature Review. Prior to COVID-19, online learning was stigmatized as lower quality in comparison to traditional teaching [1]. But as the epidemic hit hard, even institutions such as Ivy League had to move their classes online [2]. Some even labeled that switch as a “grand experiment” [3] while others studied the perception of teachers and students regarding its advantages, limitations and recommendations [4]. Nevertheless, online education has been in business for decades, long before the outbreak. Hence, scholars have developed models and standards for evaluation criteria on three individual aspects in regard of online education. They are: (1) online learning, (2) online teaching and (3) online course design. Notably, it was concluded that effective online learning stems from careful instructional designing and planning as they have a huge impact on the quality of instruction [5].

Research Goal. The goal of this study is to (1) identify the strengths and weakness of online education in comparison to traditional one and hence, based on the collected empirical data, to (2) suggest developing teaching methods for faculty members, (3) better understand how students learn more effectively whether in the physical classroom, online (both recorded and live) or in a hybrid model. Overall, the goal of this study is to evaluate the effectiveness and efficiency of online courses compared to traditional classroom learning among TTPU students.

Research Method. A qualitative research method was utilized in this study that collected empirical data drawn from a survey. TTPU students from 1st to 4th year of study were presented with the online survey, containing a range of questions from visual perception of information presented in online education platforms, how often students refer to them for quick and clear answers, the positive and negative aspects of learning online, in person or in hybrid model and what improvements should be made to order to better understand and retain course materials. More than 100 students responded to the survey. The collected data suggested how effective each mode of learning was in comparison to each other.

This survey targeted undergraduate STEM students at TTPU. A structured questionnaire was distributed online, consisting of both multiple-choice and short-answer questions. It covered students' use of online learning platforms, their perceived effectiveness and efficiency of online courses compared to traditional methods, challenges faced, and academic outcomes. Data were

analyzed using descriptive statistics to identify patterns and trends.

The survey includes 12 questions, covering:

- Year and major of study
- Online learning habits (platforms, time spent, percentage)
- Rating of effectiveness and efficiency
- Motivations for using online courses
- Retention, academic performance, and challenges
- Recommendations for future use

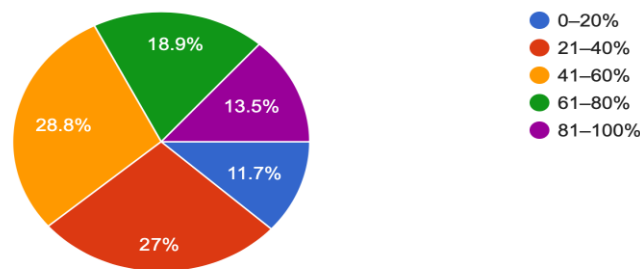
Data were analyzed using descriptive statistics and visualized through charts. An exploratory correlation analysis was also conducted.

Results. Based on the empirical data, the researchers categorized learning experiences with the chart and bar diagrams: the percentage of learning to complete through online courses such as Coursera, edX, Udemy, YouTube; the platforms most frequently for online learning; comparison to traditional classroom learning in terms of time management and flexibility; better academic performance through completing online courses; the amount of time spent studying through online courses per week.

The following charts and bars demonstrate visually the research findings:

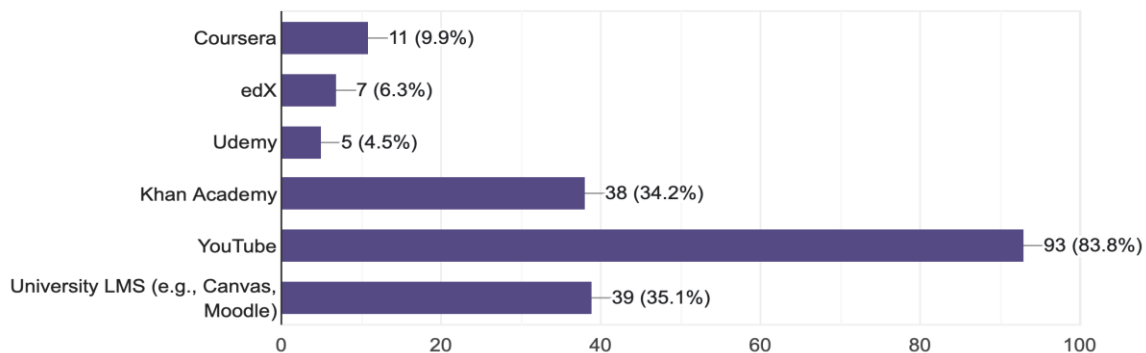
3. What percentage of your learning do you complete through online courses (e.g., Coursera, edX, Udemy, YouTube, etc.)?

111 responses



4. Which platforms do you use most frequently for online learning?

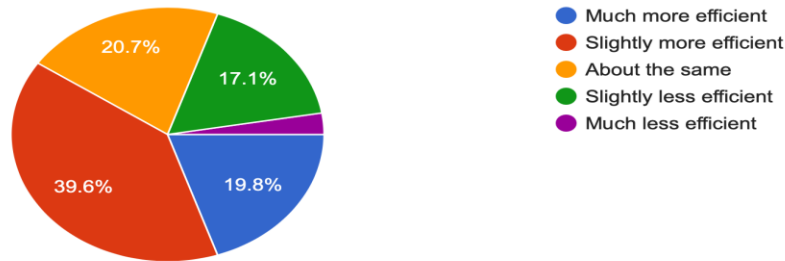
111 responses



The statistical analysis showed that students rated the effectiveness of online courses in understanding complex STEM topics as moderately high, average rating ~3.5–4 on a 5-point scale. The students’ preference fell on YouTube, Khan Academy, and university LMS platforms as the most popular. Most students completed online learning by 21–40 percent for the following reasons: lack of practical experience, issues with staying motivated and poor course structures. Nevertheless, many students indicated that a mix of online and traditional learning was best for information retention and that slight academic improvement in courses supplemented by online learning.

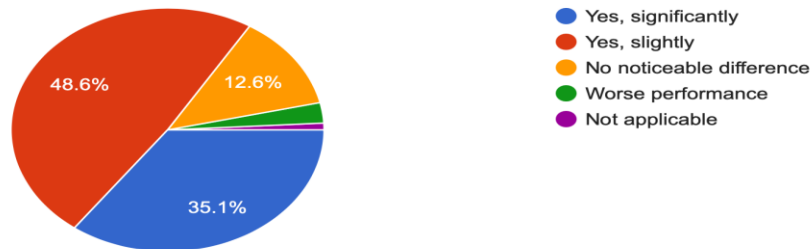
6. Compared to traditional classroom learning, how efficient do you find online courses in terms of time management and flexibility?

111 responses



9. Have you performed better academically (e.g., higher grades, deeper understanding) in subjects where you used online courses?

111 responses



12. How much time do you spend studying through online courses per week?

111 responses



Below is statistical analysis of the research findings

Category	Key Stats
Average effectiveness rating	3.6 / 5
Most used platform	YouTube, followed by Khan Academy
Typical online learning percentage	21–40%
Top challenges	1) Lack of hands-on practice, 2) Motivation issues, 3) Poor course structure
Recommendation Rate	85% recommend online learning as a supplement, not a full replacement
Weekly online study time	Mostly 1–4 hours

Hence, most students would recommend online learning only as a supplement, not a replacement, for traditional STEM education. Moreover, an exploratory analysis suggests a moderate positive relationship between the amount of time students spent studying through online courses and their perceived effectiveness of these courses. Students who dedicated 3–4 hours per week to online study consistently rated the effectiveness of online learning higher (mostly 4 out of 5). This trend implies that greater engagement with online resources may enhance the perceived benefit of online learning for STEM students.

Discussion. Since Covid-19, online teaching has become a challenging experience not only for students but also for instructors. The current study suggests that while online learning is appreciated for its flexibility and convenience, it is not viewed as a complete substitute for traditional STEM education. TTPU students found online platforms effective for reinforcing concepts but emphasized challenges in maintaining motivation and gaining practical skills. Platforms like YouTube and Khan Academy were highly valued for offering quick, accessible explanations. However, online courses were generally seen as most effective when used alongside classroom-based learning, highlighting the continued importance of face-to-face interaction, structured labs, and peer collaboration.

Conclusion. For TTPU students, online courses serve as a valuable supplement to traditional learning methods but are not sufficient as a standalone approach. Students benefit from the flexibility and self-paced nature of online platforms, which support academic improvement to a moderate degree. Nonetheless, challenges such as limited hands-on experience and motivation issues underline the need for a blended approach, combining the strengths of both online and traditional educational models, for students still value traditional learning for deeper engagement and practical skills.

In a nutshell, a blended approach combining both methods is preferred. It should be noted that students typically spend 1–4 hours per week on online learning activities.

The blended approach helped students to see a slight academic improvement and hence 85 percent of students recommend online learning only as a supplement, not a full replacement for traditional STEM education. However, due to the small sample size and the nature of self-reported data, this finding should be interpreted cautiously and further investigated with larger datasets.

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<p style="text-align: center;">Х.Хонкелдиев, Ш.Бобојонов Toshkent shahridagi Turin politexnika universitetida onlayn kurslar yoki an'anaviy kurslarning afzalliklari</p> <p>Annotatsiya. Tadqiqotda TTPU bakalavriat talabarlari o'rtasida an'anaviy ta'limga nisbatan onlayn kurslarning samaradorligi o'rganildi. Natijalar shuni ko'rsatadiki, onlayn ta'lim sezilarli moslashuvchanlik va o'rtacha akademik yaxshilanishlarni ta'minlasada, talabalar uchun an'anaviy usullarini, ayniqsa STEM bo'yicha amaliy ta'limni to'liq almashtira olmaydi. Kalit so'zlar: onlayn kurslar, YouTube, Khan Academy, Udemy, STEM, Covid, onlayn platformalar.</p>	<p style="text-align: center;">Х.Ханкелдиев, Ш.Бободжанов Исследование предпочтений в отношении онлайн-курсов или традиционных курсов в Туринском политехническом университете в Ташкенте</p> <p>Аннотация. Исследование изучало эффективность и результативность онлайн-курсов по сравнению с традиционным обучением среди студентов бакалавриата в ТТПУ. Результаты показывают, что хотя онлайн-обучение обеспечивает значительную гибкость и умеренные академические улучшения, оно не может полностью заменить традиционные методы обучения в классе, особенно для практического обучения в области STEM. Ключевые слова: Онлайн-курсы, YouTube, Khan Academy, Udemy, STEM, Covid, Онлайн-платформы.</p>
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Журнал Самарқанд иқтисодиёт ва сервис институти таҳририят
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