Teacher Trainees Readiness for E-learning in Colleges of Education in Ghana

Brain Aheto-Domi1,*, Patrique deGraft-Yankson2, Christopher Addo3, George Kwamla Bimpeh3

1Department of Technical and Vocational Education, Peki College of Education, P. O. Box 14, Peki Volta Region, Ghana
2Dean of School of Creative Art, University of Education, Winneba, P. O. Box 25, Winneba, Ghana
3Department of Educational Studies, Peki College of Education, P. O. Box 14, Peki Volta Region, Ghana

*Corresponding author: nikkoby2014@gmail.com

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Abstract Using the Unified Theory of Acceptance and Use of Technology, the study investigated college students’ readiness for online learning from seven colleges of education in Ghana’s Volta and Oti Regions (UTAUT). The study focused on college students’ eLearning readiness and their perceptions of eLearning in Ghana. The descriptive phenomenological research design was used in this study. Using the convenience sampling technique, seven colleges were chosen from a pool of forty-six colleges of education. The participants were interviewed through WhatsApp and Telegram chats. For this study, the phenomenological data analysis process developed by Colaizzi was used. The findings were organized into the following themes: Adaptability Struggle, The New Digital Divide, A shift in teacher professional development, Interactivity, and Time Management. According to the findings, colleges used Google Classroom, WhatsApp, Edmodo, and Telegram for learning and teaching. It was discovered that students face internet connectivity issues, accessibility issues, poor time management, adaptability challenges, technical support issues, high cost of internet bundle challenges with smart devices, and disruption as a result of the need to assist with other domestic activities. Due to the numerous challenges associated with online learning, college students suggest that the teaching and learning should be done in conjunction with face-to-face learning (blended learning) or suspended entirely.

Keywords: UTAUT, time management, connectivity and interactivity, adaptability struggle, The New Digital Divide and ePedagogy

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1. Background to the Study

The coronavirus pandemic (COVID 19) has tested the very fabric of our being. Ghana, and the rest of the world, has faced challenges in economics, science, health, politics, and education. Education has taken a new turn, with teachers being required to unlearn and relearn the mode of operation for doing blended teaching, while students are required to do blended learning as well. E-learning has become the day’s cradle, with the Internet as the classroom and ICTs as the elements that everyone must use. Students’ readiness for eLearning has hampered their performance in recent months, and no one knows when or how it will be resolved [1].

The crisis is exacerbating pre-existing education disparities by reducing the opportunities for many of the most vulnerable children, youth, and adults living in poor and rural areas. Forcibly displacing them to continue with their education. Learning losses also threaten to extend beyond this generation and erase decades of progress, not least in support of the youth of Africa’s educational access and retention. Several studies on e-learning readiness have been conducted both in Ghana and elsewhere.

These studies investigated learner access to eLearning resources and preferences for eLearning delivery mode in Ghanaian distance education programs [2], providing a useful model for e-learning readiness assessment [3]. Some people think about Online Learning in Higher Education in Sub-Saharan Africa: Ghanaian University Students’ Experiences and Perceptions (4). A group of researchers looked into a specific aspect of e-learning readiness [4]. A group of researchers considered a particular aspect of e-learning readiness [5,6,7].

Many studies have assessed student readiness [8,9]. In all of these studies, a variety of sizes and patterns were used to assess readiness, but it is impractical to obtain a consistent pattern to measure student readiness for e-learning. Some characteristics of successful interactive multimedia were mentioned in the aforementioned studies. Working with computers and Internet skills, self-learning skills, spontaneity, problem-solving and critical thinking, time management skills, interest in learning, leadership skills, and ability to communicate with the group are examples of these characteristics. They also include
self-assessment, questioning authority, debate skills, responsibility, and the ability to use online resources and metacognitive outcomes. Computers, the Internet (websites, blogs, web 2.0, google+, google classroom, SNS, Zoom, VEDAMO’s, Virtual Classroom, collaborative eLearning tools, Telegram, WhatsApp, EMIS, and emails), live broadcasting technologies (radio, television, and webcasting), recorded broadcasting technologies (podcasting, audio and video players, and storage devices) are also among the technological tools and resources [1].

In recent years, there has been an avalanche of trainees’ thirst for virtual learning. As a result, in today’s technologically advanced environment, online learning in higher education institutions has emerged as a major mode of delivery [10]. Access to resources such as computers, the Internet, data, smart devices, and other digital tools by learners is critical in determining certain learner behaviors. Historically, teacher education has been at the forefront of global educational development. According to [11], curriculum development and the role of teachers in curriculum development are critical. What education curriculums have failed to do is equip tutors and students with the General Technology Competency and Use (GTCU) framework, authored by Desjardins., Lacasse & Belair (2001) cited in (1), and the accompanying Unified Theory of Acceptance and Use of Technology (UTAUT) as an alternative, readiness learning apparatus in the wake of deadly coronavirus pandemic.

2. Statement of the Problem

There is increasing learning inequality amongst trainees in colleges of education (CoE), where adaptability struggles, technical issues, computer literacy, self-motivation, accessibility, connectivity, interactivity, and digital divide are major factors to consider when enrolling in eLearning for higher education [1]. There has been some criticism that CoE students are not yet prepared for the transition from traditional face-to-face classrooms to blended learning and virtual learning classrooms. However, there hasn’t been a lot of research done to back up this claim. This paper seeks to investigate college students’ readiness for virtual learning in Ghanaian educational colleges.

3. Research Questions

1. How prepared are college students to participate in e-learning in terms of collaborative communication skills, cognitive skills, and computer and internet access skills?
2. Is student readiness for e-learning different from face-to-face learning?
3. Does students’ access to ICT influence their e-learning in educational institutions?

4. Research Method

The descriptive phenomenology design was used for this study. This design was selected because the focus of the study was to describe trainee teacher’s readiness for online learning. [12]. Also, the rationale for selecting descriptive phenomenology design was that it helps to understand and explain the experiences of research participants as they give an account of their experiences (Polit and Tatano Beck 2010, Wertz et al 2011 cited in [12]. All participants were level two hundred students who attended lectures online. These participants were selected using the convenience sampling procedure. This procedure was appropriate because due to the COVID-19 pandemic, participants were in their various homes and the only means of contacting them was through the social media platforms created by their tutors’. Upon reaching a participant via telegram and WhatsApp, the participants were briefed about the purpose of the study and their consent was sought before the interview. Colaizzi’s process for phenomenological data analysis was adopted for this study [13]. Pseudonyms were given to individual participants to ensure anonymity and confidentiality. The findings derived from the analysed data were presented in themes.

5. Instrument

The researcher used a semi-structured interview guide comprising a list of prepared questions related to the research questions to conduct the interview. The instrument was prepared based on recurring themes in the extant literature and was screened for accuracy and validity by a researcher in Ghana. This allowed the researchers to ask open-ended questions to ensure respondents give their broad perspectives about the topic of the study. Interviews allow a researcher to probe and get an in-depth meaning of the feelings, perceptions and attitudes of participants [14].

6. Population and Sampling

The target population consisted of seven colleges of education from the Volta and Oti regions of Ghana who participated in online learning at the end of the second semester. Five hundred and fifteen (515) students were chosen at random to participate in the study. Two hundred and seventy (270) students were chosen as samples for the study based on how frequent and punctual they were during the study period. Dambai College, Peki College, Amédzofe College, Jasikan College, St. Francis College, Akatsi College, and St. Theresa’s College students were chosen.

7. Procedures

Students were drawn from seven colleges of education in the Volta and Oti regions of Ghana. An introductory letter explaining the purpose of the study and requesting consent to participate in the study was sent to the randomly selected students. After obtaining the consent of the study participants, the researcher scheduled an appointment with each of them to conduct the interview. All interviews were conducted in English via the “Telegram and WhatsApp” app.
8. Results and Discussion

Now may be an excellent time for African higher education institutions to rethink the future of education and take practical steps toward implementing a blended learning approach in education to improve access and equity. Several African universities, including those in Egypt, Ghana, South Africa, and Rwanda, among others, have moved some of their programs to online platforms and partnered with telcos to zero-rate these platforms. In some cases, these universities have made data packages and laptop computers available to students in order to improve access. The same cannot be said for colleges of education.

In their case, T-Tel provided android phones at a cost to some deserving students, but the issue of data was never addressed.

8.1. A Shift in Teacher Professional Development

[15], like [16], recognizes the value of professional development that focuses solely on increasing teachers’ content and pedagogical content knowledge and teaching skills. She observed a shift in decision-makers’ perceptions and beliefs about the purpose of professional development, which is to improve the learning of difficult content for all students.

To keep up with the changes brought about by new forms of education delivery, teacher training facilities around the world will improve Teacher Professional Development. Teachers would need to be trained on how to create online content and how to ensure its relevance to the course content. This will be primarily concerned with ensuring that results and expertise are important. The current level of professional development for Ghanaian teachers is low, with the majority of teachers lacking technological expertise. Ghana will largely be left behind as a result of this. Most tutors would not have the desired training in preparing online lessons for students within the Colleges of Education, except for COVID 19. T-Tel had organized a one-week training workshop titled “online design, teaching, and learning” for all Ghanaian colleges in order to prepare them for the second semester of the 2019/2020 academic year. The exercise lasted twenty-five hours and may have made it difficult for most digital migrant’s tutors to cope with learning and teaching. Despite posing challenges for both instructors and students, eLearning, the most recent wave of education, is already gaining traction. While instructors must put in a lot of effort and time to design the instruction, students must equip themselves with technical knowledge in order to decode the course material.

The decision to transition from traditional face-to-face instruction to eLearning is heavily influenced by how professional development affects student achievement in three stages. For starters, professional development broadens and deepens teachers’ knowledge and skills. Second, there’s ePedagogy and skill development. Third, better teaching leads to higher student achievement. Better student learning cannot be expected if one link is weak or absent. Students will not benefit from a teacher’s professional development if he or she fails to apply twenty-first century pedagogies and new ideas from professional development to classroom instruction, for example.

When tutors were asked what assistance they needed to improve the quality of online teaching, the vast majority stated that they needed what could best help them deliver remote learning to students. A small majority desired access to digital content in order to use the various ePedagogies available for synchronous and asynchronous learning and teaching.

According to [15] professional development is a process of providing teachers with new skills and concepts related to the work of teaching.

However, beyond the acquisition of new skills, there is an assumption that this will translate into improved student learning and achievement once the teacher applies these new skills and knowledge to practice in the classroom. However, not all professional development experiences are effective in increasing student learning gains, but studies are emerging that show that those that are research-based, thoughtfully designed and delivered, and focused on the right things can, in fact, impact learning. [16] has a wealth of experience investigating the impact of professional development on student learning. He discovered that effective professional development will assist educators in acquiring the instructional procedures and scientifically researched-based strategies required to assist all students in meeting the articulated learning goals. It is important to focus on improving the teacher, according to [16], because true educational reform does not take place when the teacher is not factored. In all 12 tutors out of the 45 forming 27% said they have fair knowledge about the technological content knowledge and the remaining 33 which is 73% are struggling with the TPACK.

Figure 1. What assistance would be most helpful for tutors in the College of Education
8.2. Adaptability Struggle

Switching from traditional classroom and face-to-face instructor training to computer-based training in a virtual classroom completely transforms the learning experience for students. Their resistance to change prevents them from adapting to the online learning environment, and it takes time for them to become acquainted with Course Management Systems (CMS) and computer-based education methods. While passive listening and taking notes are expected in a traditional classroom, online discussions or creating a website necessitate taking action. Students with a “traditional” mindset struggle to adapt; however, they must accept the new learning circumstances with an open mind and heart. Understanding the benefits of eLearning and even discussing them with their peers may change this mindset and better prepare students for online classes. Given that most college students received their secondary and secondary-technical education in the face-to-face setting, eLearning may require an adaptation challenge for many. In an attempt to understand the swift change in mode learning may be daunting for many students, adapt to online coursework that is, the extent to which students perform as well online as they do face-to-face a large body of research has compared outcomes between online and face-to-face courses. Results have been mixed across studies, with some finding positive results for online learning and others finding negative results [17,18].

Table 1. Adaptability struggle - College of Education Tutors' Reporting Virtual Learning Activities 2020

| Course Code | Course Title | Date | Time: From | -To | Class Size | No: Joined | No: Present | No: Female | No: of male | Present |
|-------------|--------------|------|------------|-----|-----------|-----------|------------|-----------|------------|---------|
| UGTE 102    | ICT          | 05/05/2020 | 11:00 AM   | 1:00 PM | 245       | 244       | 145       | 76        | 69         |
| TEJS 102    | Social Cultural and Psychology of Learning | 06/05/2020 | 11:00 | 13:00 | 245 | 240 | 113 | 37 | 76 |
| EBS265      | Social Structure | 06/05/2020 | 08:00 | 10:00 | 40 | 40 | 26 | 14 | 12 |
| EBS 204     | The Social Environment | 06/05/2020 | 02:00 | 04:00 | 60 | 60 | 32 | 10 | 22 |
| EBS 245     | Curriculum Studies in Physical Education | 5th May, 2020 | 5:00p.m | 7:00p.m | 17 | 10 | 7 | 3 | 4 |
| EBS 288     | First Aid/Care and Prevention of Sports Injuries | 4th May, 2020 | 2:00p.m | 4:00p.m | 34 | 21 | 21 | 3 | 18 |
| EBS293      | Morphology of Ghanaian Language | 05/05/2020 | 02:00 | 16:00 | 48 | 48 | 46 | 23 | 23 |
| EBS 228     | Social Studies as integrated subject | 07/05/2020 | 11:00 | 13:00 | 29 | 29 | 12 | 4 | 8 |
| EBS 262     | Prin. & Methods | 07/05/2020 | 2:00 pm | 4:00 pm | 273 | 263 | 255 | 124 | 131 |
| EBS 280     | Introduction to Semantics | 05 /05 /2020 | 14:00pm | 16:00pm | 40 | 40 | 23 | 10 | 13 |
| TEJS 104    | Mathematics | 05/05/2020 | 08:00am | 10:00am | 251 | 251 | 121 | 72 | 49 |
| EBS 241     | Curriculum Studies in GH. Lang.(EUE) | 05/05/2020 | 5:00pm | 7:00pm | 42 | 42 | 25 | 13 | 12 |
| EBS 255     | Comprehension and Summary of GH. Lang.(EUE) | 08/05/2020 | 11:00am | 1:00pm | 48 | 48 | 35 | 19 | 16 |
| EBS 252     | Educating Individuals with Diverse Learning Needs | 06/05/2020 | 11:00pm | 01:00pm | 270 | 270 | 225 | 100 | 125 |
| EBS 234     | Assessment in Basic schools | 08/05/2020 | 02:00pm | 04:00pm | 273 | 238 | 52 | 20 | 32 |

In order to explore whether the gap between online and face-to-face outcomes is wider or narrower and that what could be the adaptability challenge for certain student, the study examined fifteen courses that went on at different times. The study looked at class size, the number of students that joined the online class, number of students that were present for synchronous learning and gender. The results are presented in Table 1. As a first step in each heterogeneity analysis, the study revealed that students are heavily present online, but when it comes to the numbers that joined in a synchronous class there is always a gap between the numbers. In an ICT class out of 245 students, 244 joined the class and145 were present during the synchronous sessions. There is a huge gap of 100 students who by oracle could not attend that session. Observation made was that within the fifteen courses observed there is a heavy presence of male students than female students if compared course after course. A cursory look at EBS 204, TEJS 102, TEJS104, and EBS 234 also shows there are huge absence of students during synchronous session and this could be caused by several factors.

In terms of gender, while several studies have found no differences between males and females in terms of their learning outcomes in online courses [19,20,21,22] and others have found that women perform significantly better than men [23-28].

To explain the stronger performance of women within their study of online courses, [29] examined course observation and student survey data. They concluded that the women in their sample were more motivated, more adept at communicating online, and more effective in scheduling their learning. In contrast, male participants accessed fewer course website pages and fewer discussion forum posts; they also had poorer time management skills which would be looked at.

To this end student’s adaptability to online learning may differ by academic subject, as online courses might be more engaging or effective in some subject areas than in others. For instance, it may be more difficult to create effective online materials, activities, or assignments in fields that require a high degree of hands-on demonstration and practice, intensive instructor-student
interaction, or immediate personalized feedback [30]. In support of the notion that the effectiveness of online learning may differ across subject areas, a recent qualitative study [30] examined course subjects that students preferred to take online rather than face-to-face. Students reported that they preferred to take “difficult” courses (with mathematics being a frequently cited example) in a face-to-face setting, while “easy” courses could be taken online. Students also explicitly identified some subject areas that they felt were poorly facilitated and that could be a reason assigned to their absence.

8.3. The New Digital Divide

In education, the digital divide is most commonly defined as the gap between those students who have, those who and know how to use the internet and the information technologies that are currently transforming education [17]. According to [30], the “digital divide is marked not only by physical access to computers and connectivity but also by access to the additional resources that allow people to use technology well” (p. 6). Due to the affordability of many information technologies today the current meaning of digital divide is changing from having access, to knowing how to use the technologies [17].

In this way the digital divide still acts as a challenge for education and more specifically e-learning environments. In education the digital divide has, most recently, become more about closing the gap between using the resources appropriately to obtain quality educational outcomes than not having access to the technology [17,31]. The quality of learning outcomes, and more importantly the successful use of the expected technology resources, all hinges on the amount of experience and comfort level each learner has with these specific resource technologies [31].

Table 2. The New Digital Divide amongst College Students

| Class Size | Physical Access | Usage Access | Motivational Access | Skill Access |
|------------|-----------------|--------------|---------------------|-------------|
| 245        | 145             | 96           | 78                  | 63          |
| 245        | 140             | 113          | 37                  | 76          |
| 40         | 40              | 26           | 14                  | 12          |
| 60         | 55              | 32           | 10                  | 22          |
| 270        | 255             | 128          | 131                 | 124         |
| 48         | 32              | 25           | 13                  | 18          |
| 48         | 48              | 46           | 23                  | 23          |
| 29         | 12              | 08           | 06                  | 08          |
| 270        | 238             | 105          | 99                  | 77          |
| 216        | 158             | 122          | 96                  | 122         |

Today, the digital divide is defined to uniquely illuminate the extent of lack in digital resources of the individual nation experiencing it.

8.4. Interactivity Challenge

Some people learn better in a social context. For them, online learning with its emphasis on individual access and self-paced studying can feel somewhat impersonal. Lack of interaction with other learners or instructors is one of the most common problems faced by eLearners. One of the inherent problems with online classes in general is it’s strictly asynchronous or synchronous nature. Asynchronous instruction means that teachers and learners do not have
synchronous sessions and that students have access to course content through the Internet at any time they want or need. Communication among the participants occurs mainly through email and online forums and is typically moderated by the instructor [Watts, 2016 cited in [33]]. According to [34] “Asynchronous collaborative learning may well be the defining technology of the postindustrial era of distance education.” (p.12) Yet another type of distance education is blended learning (BL). Garrison and Kanuka (2004) cited in [33] define BL as combining face-to-face classroom time with online learning experiences. Although it is not clear as to how much time is allocated to online in the blended model “the real test of blended learning is the effective integration of the two main components (face-to-face and Internet technology) such that we are not just adding on to the existing dominant approach or method.” (p.97) In the BL format different teaching strategies and instructional technology can be used to help individuals who have different learning styles, needs and interests [Tseng & Walsh Jr., 2016] cited in [33]).

![Figure 3. Interactivity of trainee teachers of Volta and Oti Regions of Ghana during eLearning](image)

From the chart above it is obvious that a lot of trainees are present online but during learning and teaching process they are inactive or absent. It is observed that there are 244 students who joined the class but 145 were present online for the day’s class. Within this stratum 48 trainees were females and 96 males, with 96 absent in that particular class. These numbers keep reducing and by the end of the session only 40 trainees were present. [35] reminds that interaction cannot be viewed only for its own sake, but in context with the methods and systems available in the given situation. That is also the approach here; the aim is not to provide a general framework but rather to investigate the possibilities and improvement needs in a given environment. The implementation follows the same design as that presented by [35]: aligning learning goals, activities and evaluation, with a learner-centered approach, designed to provide interaction between active and reflective learning. For active learning to be encouraged, interaction needs to be activity-based [36]. On the same day another lesson was observed with 145 trainees joining the session, with 113 present when the lesson had started. This had 37 females as against 76 males with 32 trainees absent. There again the number kept reducing and by the end of the two-hour session the number present was 27. The third lesson saw 40 trainees joining the session with only 27 present during the synchronous session made up of 15 females and 12 males. From the ongoing discourse the trainee’s behavior can be tied with new digital divide and adaptability struggle. This buttressed by Karjalainen who has identified a list of goals to strive for in online education, based on Herrington’s three types of approaches to quality in online education: pedagogies, resources and delivery strategies [37].

8.5. Time Management

Time management is a difficult task for eLearners, as online courses require a lot of time and intensive work. If you don’t plan the succeed you plan to fail. Time management has been a predictor for students online learning challenging the very elements such as blended, hybrid, and remote online studies. As elearning presents unique challenges to college tutors and students, this study discovered that there is poor time management in Ghanaian colleges of education, owing to the colleges' lack of a robust management system capable of tracking students’ online activities and how students access learning during this challenging COVID 19 epoch. When asked if they were always present in online classes, 123 responded “Yes” with a “Big But”, in that they occasionally joined the online class but had poor internet access.

78 people said no to the question because they spend most of their time doing housework or engaging in nonacademic activities like watching TV and playing video games. The study revealed that 268 respondents who were engaged in the online studies had no study plan, indicating their studies were random and had no focus as against 86 who said they had personal timetable for which follow religiously. 215 respondents answered question 8 by saying they most of the time get distracted in the house with siblings and other house neighbours’ performing varying activities which generates noise. The tech savvy nature of students makes them able to multi-task. Some respondents say they are to play music and read simultaneously others say they are able to watch the TV and do mathematics assignments. On the question of being able to track and prioritize, 254 were affirmative with “Yes” and that they are able to adhere to their time. 105 said they only study when they feel like causing them to wish they are still having face-to-face interaction.

The truth is that time is just like any other finite resource. If you don’t learn how to manage your time wisely, you won’t be able to get things done as efficiently as possible. You may miss out on meeting your goals, fail to study often enough, and get too far behind on your lessons. Even if you don’t have those specific problems, time management is also about helping you avoid stress while juggling everything.

9. Conclusion and Recommendations

With so many different ways to define e-learning and the educational approaches that can be taken in these learning environments, it is the conclusion of this study that e-learning is an innovative approach to learning. It is
a holistic way of teaching and learning that meets the needs of today’s digital natives. It is an environment made up of collaboration, choice, and an array of technological resources that supports a successful online learning experience. However, in order for learners to be successful in this learning environment the challenges to e-learning must be overcome with support and some best practice solutions.

Instructors and learners must embrace the shift from traditional classroom practices to an e-learning approach to education. Developing a purposeful and well-defined online course, which supports the instructor and learner, means devoting the appropriate time and embedding the applicable course elements into the e-learning environment is key for Colleges of education in Ghana.

Looking at the Colleges of education situation in Ghanaian, it is evident that the pandemic has further stripped us of not having a firm grip of the educational system and if Government stutters in its rapid response of creating and expanding elearning to the less privileged, the situation will worsen.

In order to understand the challenges associated with an e-learning environment it is important to define what the term e-learning means. [28] help define e-learning as instruction delivered by any technological mode intended to promote learning [38]. Teaching and learning in an e-learning environment happens differently than in the traditional classroom and can present new challenges to instructors and learners participating in this online learning environment. Technology-assisted learning tools is quickly changing the face of education, transitioning the classroom only learning environment to an online only or blended online learning experience.

One solution to this challenge is for the instructor to implement a learning environment that encourages collaboration. Providing learners with the opportunity to collaborate, share, and create will increase the learner’s use of various technologies, enhance their e-learning experience, and support self-directed and ongoing learning [38,39]. During this time the instructor must consider the learner’s technological incompetence’s and accept various ability levels; willing to allow learners choice with the expected performance objectives given it results in the appropriate learning outcomes [17]. The learner should ask questions, seek additional information from credible sources, reflect often, and interact with other learners in academic discourse related to the online learning objectives. Having an online community where learners can collaborate in a safe and respected learning environment will help close the gap of the new digital divide, and in doing so helps to create a culture of digital natives conducive to effective e-learning [31,38,39].

The study also found time management to be a predictor of student success. Relationships were noted for specific time management skills, ability to balance multiple roles, pacing ability, self-direction, and quality of work should be checked. Furthermore, students who were able to prioritize time commitments experienced great success. Conversely, poor time management was given as a reason for dropping bad performances. A regular schedule planner would be a significant help to these learners, as they could even set reminders for their courses and assignments.

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