



INTEGRATING BLENDED TEACHING INTO EDUCATION CURRICULUM

Vincent Chidindu Asogwa¹, Zanele Gule², Alfred F. Tsikati³

Department of Agricultural Education & Extension, University of Eswatini, the Kingdom of Eswatini

¹asogwa@uniswa.sz, ²gulem@uniswa.sz, ³tsikati@uniswa.sz

Corresponding author: *Vincent Chidindu Asogwa
Tel.: +237 Email: asogwa@uniswa.sz

ABSTRACT

The onset of the 21st century has brought about tremendous changes in all areas of the world, whether it's education, technology, economy, or society. Recently, there has been a shift in the educational landscape from teacher-centered to learner-centered education approaches to enhance the active participation of students for effective learning. The COVID 19 pandemic is also throwing up a lot of challenges for individuals to cope with its impacts, especially in education. Blended learning has been adopted widely as it seems to be a promising approach to address most of the 21st-century challenges; however, no meaningful learning takes place without meaningful teaching. Research and literature on blended learning seem to be expanding with less increase in research on blended teaching. This has, however, left educators and instructors wondering how they can effectively carry out blended teaching for effective blended learning. As blended learning becomes more prevalent, opportunities for research into blended teaching should also increase. Educators need to know how they apply blended teaching effectively in this era. To remedy this situation, this review synthesizes how teachers can integrate blended teaching into an education curriculum to guide learning experiences and activities of students properly for effective learning. Concepts such as curriculum, integration, blended teaching, and ways of integrating blended teaching into an education curriculum were discussed. The models and approaches of blended teaching, principles for integrating blended teaching into the curriculum, and factors determining the integration of blended teaching into the curriculum of an education programme were identified. The paper concludes by discussing the various challenges to integrating blended teaching into an education curriculum.

KEYWORDS

Blended learning, blended teaching, integration of curriculum, remote learning.



Introduction

Recently, there is a paradigm shift from teacher-centred to learner-centred education as one of the emerging trends in the 21st century. This situation has affected virtually all sectors of human endeavour to enhance active participation of students for effective learning. To cap it all, the present COVID-19 pandemic necessitated remote learning as the only possible means to educate learning while observing the recommendation of World Health Organization (WHO) which is social distancing as the surest method to flatten the spread of the virus. Be that may, the present issue is that the recommended ratio for teacher-students activity which is 30%:70 % (Pino-James, 2015; TESOL International Association, 2019), is being violated that teachers reduce teaching responsibilities to less than 25%. This is evidenced in the online instruction whereby teachers upload lecture notes without explanation for comprehension, hence reducing themselves to less facilitator of learning and leading to frustration among students. Presently, the percentage ratio of publications on blended teaching and blended learning shows that emphasis has completely shifted from teaching to learning, which makes it difficult for teachers to understand what to do exactly for effective blended learning. Hence, there is little emphasis on what and how teachers including those in education should move from the face-to-face teaching to blended teaching, yet no meaningful learning can take place without meaningful teaching. It was in this light that this paper x-rayed what and how teachers can integrate blended teaching into the curriculum to guide learning experiences and activities of students properly for effective learning in agricultural education. Therefore, this study explained curriculum, blended teaching, and ways of integrating blended learning into the curriculum, principles for integrating blended teaching into the curriculum, determinants of blended teaching and challenges for integrating blended teaching into the curriculum.

EDUCATION CURRICULUM

Curriculum is a written plan outlining what students will be taught in a course of study. Curriculum refers to all the courses offered at a given school, or at a school in a particular area of study (McBrien & Bradt, 1997). It is the planned and guided learning experiences and intended outcomes, formulated through the systematic reconstruction of knowledge and experience, under the auspices of the school, for the learner's continuous and wilful growth in personal-social competence (Tanner & Tanner, 2007). It is an explicitly and implicitly intentional set of interactions designed to facilitate learning and development and to impose meaning on experience (Miller & Seller in Jack, 2014) stated that curriculum. The explicit intentions usually are expressed in written curricula and in courses of study; the implicit intentions are found in the 'hidden curriculum' by which one means the roles and norms that underlie interactions in the school. Education curriculum is a document formulated and designed by an institution through a systematic reconstruction of knowledge and experience to guide the

learning experiences and intended outcomes of student-teachers in an institution for professional competence.

BLENDED TEACHING

Sometimes, the concepts of mixed and blended teaching are somewhat misconceived by learners. Blended teaching is commonly associated with the use of computer network technology, primarily over or through the Internet or Intranet, to deliver information and instructions to learners whereas mixed teaching merely depicts the use of two or more methods of teaching which may or may not involve online teaching facilities. For instance, the use of lecture and field trip is mixed teaching but cannot be regarded as blended teaching. The reason being that it only entails one delivery method and media which is lecture. Blended teaching combines different delivery methods or media to motivate learners and promote meaningful learning (Singh, 2003). It means integrating classroom teaching with online experiences (Garrison & Kanuka, 2004). It is a combination of students' needs, technological feasibility, and a professional preference toward face-to-face instruction to provide a perfect environment that combines the best features of face-to-face, videoconferencing, and online instruction (Khan, 2005). It is a combination of digital and face-to-face content delivery method (Graham 2006). Blended teaching is the integration of online instructional media into a traditional classroom, or into a distance learning environment; that is, any combination of media that supports instruction, regardless of the mix of synchronous or asynchronous media (Holden & Westfall, 2006). It is the combination of face-to-face teaching and online teaching (online teaching refers to the use of computer network technology, primarily over or through the internet, to deliver information and instructions to individuals, (Wang et al., 2010). The delivery of this method may include one or any combination of modes to accompany the face-to-face tutorials from, using social media, to problem-solving gamification, to videoconferencing with each other or with industry participants, to role-playing activities, to virtual learning systems, to online interactive quizzes or challenges, to the multitude of simulations available online (Hamilton & Tee 2010). Blend teaching is a delivery method that combines a variety of traditional and non-traditional instructional techniques, tools, and approaches to design, develop, manage, and evaluate the learning process (Musawi, 2020). It is the combination of e-teaching tools (from video streaming over the Web to e-mail) and traditional classroom teaching to ensure maximum effectiveness of outcomes.

Therefore, blended teaching is a combination of offline and online instructional media by a teacher to impart information to the learners for effective learning outcomes. Blended teaching is named based on the teacher's instructional channel or tools rather than instructional methods applied. For instance, live chats, self-paced learning, instant messaging, social networking, blog and forums, applications,

and webinars are examples of tools that teachers can use to incorporate online components in their classes. The idea behind blending teaching is to combine two or more methods of teaching to complement the weakness of each or one another. The teaching media are designed to complement each other and promote learning processes. Teachers are encouraged to use blended teaching rather than mixed teaching because it produces better result which confirms the facts that one tree cannot make a forest and that two good heads are better than one.

Concept of Integration

Integration is the act of combining things or people together that were formerly separated. It is a process in which separated components or sub systems are combined to address problems in their interactions (Rouce, 2013). It means providing a learning environment that offers this coherent education, allowing connections to be made within and across subjects (Etim, 2005). Therefore, integration here means the process of infusing blended teaching into the existing curriculum of an education programme in Universities for effective teacher preparation for sustainable development. Blended teaching can be integrated into an Education curriculum in three ways:

- a. **As a course:** In this case, blended teaching is developed fully as a course of study and incorporated into the existing curriculum with its specific objectives, appropriate contents of learning experience to achieved, instruction materials for implementation and evaluation techniques to assess the extent to which the objectives have been achieved (Tanner & Tanner, 2007). This requires curriculum review for substitution since the curriculum may already be loaded for addition course.
- b. **As part of course:** Blending teaching can be made as part of course that is related to methods of teaching in the agricultural education curriculum. It takes the same forms as in above but narrower in coverage and depth. The advantage is that it does not require curriculum review and can be used to expose learners to the basic knowledge of blended teaching.
- c. **As part of teaching method:** In this regard, blended teaching is applied as teaching strategy by the teacher and infused into one of the instructional methods recommended in the existing curriculum for instructional delivery. A teaching strategy is more comprehensive as it may make use of different methods, techniques, aids and equipment, tactics for organizing the teaching-learning activities and environment in an effective way. The teacher only applies without any explanation of objectives and content of the application. Hence, the learners are

not exposed to knowledge and skills in blended teaching order than the one utilized in teaching them.

While it may take time for some institutions offering agricultural education to review their curriculum to integrate blending teaching, teachers are encouraged to begin by adopting blending teaching as an instruction strategy and in-cooperating it as part of a related course like “Methods of Teaching” among others.

Needs for Integrating Blended Teaching into an Education Curriculum

Blended teaching, just like blended learning, provides better teaching comprehension and outcomes as it appeals to more than one sense organs of the students, which results in enhanced performance, retention, and course satisfaction (Hsu& Hsieh 2011; Johnson et al. 2008). It increases and makes it easier for teachers to share information among educational communities and to the learner with limited words, thereby saving time and reducing job stress with increased job satisfaction among teachers (Azizan, 2010; Hunt, 2018). It saves teachers the time required for planning, implementing, and evaluating instruction and student’s preformation without compromising any educational domain (Layton, 2020). Teachers being digitally literate enhance the chances of extending their lessons and conversations beyond the classroom. Blended teaching facilitates independent and collaborative teaching experiences of teachers and enables them to provide learning environments and activities for students both synchronously and asynchronously for active participation, interaction, collaboration, and effective learning (Chan et al. 2016; Revere & Kovach, 2011; Richardson & Ice 2010). It utilizes a wide range of technologies and activities that services different types of students with different learning styles (Johnson et al. 2008; Watson in Kaur, 2013). It also accommodates larger number of learners in a course without adding equally pressure to the classroom space and the teacher (Holley & Oliver 2010). Blended teaching builds both a community of inquiry and a platform for free and interactive dialogue among teachers and students. The technological tools can pave way for the negotiation of meaning, scaffolding, and collaboration among teachers (Kumar, 2009). Teaching let-live events and webinars provide students with synchronous (classroom) and asynchronous (online) learning activities to explore knowledge in their own time and at their own pace (Laster, 2005). Combining technologically mediated teaching with class debates helps students gain more understanding of the subject matter and develops their cognitive and social skills at the same time, hence creates the best possible learning solution for the target learners (Peters, 2009). Online teaching encourages exchange of information across institutions and countries, especially for introverted teachers (Kumar 2010). It encourages continuous personal and professional

development to remain relevant to the need of the students in technological age (Holley & Oliver 2010). It also provides opportunities to teachers for the gradual development of complex or difficult concepts and theories (Woodall, 2010). It combines various pedagogical approaches like behaviourism, constructivism, and cognitive learning patterns to produce an optimal learning outcome with or without the use of instructional technology (Azizan, 2010; Kaur, 2013). Cost savings through minimizing time away from the job and travel/classroom/teacher expenses. It saves time for both teachers and student and encourages individualization benefits of self-paced especially for contents that require minimum interaction and high concentration (Hunt, 2018; Woodall, 2010). Teachers can use Learning Management Systems (LMS) Moodle to post readings, videos, wikis, forums, and quizzes to enhance self-regulation and to increase student-teacher interaction outside the class setting (Layton, 2020). This also leads to improved retention and reinforcement through follow-up mechanisms on the Web (instant feedback) (E-Learning Resources, 2012; Hunt, 2018).

Benefits of Blended Teaching to Students

Blended teaching also enables instructional strategies not practical or possible in traditional settings. These strategies can lead to improved student engagement and learning outcomes. Blended teaching can provide increased flexibility and access to learning experiences by extending learning beyond the confines of the classroom. Blended teaching is beneficial to students in the following ways.

1. **Participation:** Traditional classrooms usually allow only one student to share his or her ideas at a time. Teachers try to remedy this difficulty by using small group discussions to increase participation, but even in small groups only one person can share his or her ideas at a time and one student may dominate the conversation resulting in groupthink or in one student's ideas getting more attention than another's. Discussion in blended teaching can help equalize the amount of student participation at the same time.
2. **Pacing:** Within an aspect of blended teaching, students can move at their own pace, advancing when they have met specific benchmarks.
3. **Personalization:** It is difficult to personalize learning to every student's interest, skills and goals. Online learning components can help teachers provide students with more agency in directing their own education.

4. **Space:** Blended teaching space is much more flexible than the classroom space. Using online instruction allows students to learn wherever and whenever is most beneficial to them, whether that be at school before, during, or after class, or at home when they get back from their late-night practices, rehearsals, or part-time jobs.
5. **Personal interaction:** In the traditional classroom, instruction is often focused on the whole class. This practice helps monitor student behavior and manage the flow of classroom activities. However, in a blended teaching environment, students are engaged in learning online, and one can spend more time conferencing and helping individual students.
6. **Preparation:** Blending teaching allows students to have access to course materials through the online space, even before or after class time, providing students with additional opportunities to learn. This can help address some of the difficulties teachers often face, such as having students come to class unprepared or leaving class without having access to the materials needed to finish their work.
7. **Practice with feedback:** The elements of blended teaching through evaluation provide students with the opportunity to receive immediate feedback through responsive assessments and interactive activities. It can be difficult to provide students with relevant, immediate feedback on all their work with traditional teaching (Graham, Borup, Short& Archambault,2019).

APPROACHES TO BLENDED TEACHING

There are two main approaches to blended teaching; they are synchronous and asynchronous.

Synchronous blended teaching: This is where the teaching (instruction) carried out by the teacher and learning by the students take place simultaneously (together) at the same time. That is, while the teacher is teaching, the students are learning directly from the teacher immediately; there is always real-time interaction between the teacher and the students. Common examples of synchronous blended teaching are video conferencing, teleconferencing, live chatting, zoom meeting, webinar and live-streamed lectures that must be viewed in real time.

Asynchronous blended teaching. This occurs when the teaching (instruction) by the teacher and learning by the students happen at different times. The teachers give instruction at one time while the students access of takes the instruction at some other convenient to them at their various locations. There is not direct interaction between the teacher and the students; it is instruction is transmitted

through instructional media but offers students the flexibility to progress at their own pace. Common examples of asynchronous blended teaching in Tables 1 and 2 are self-guided lesson modules, pre-recorded video content, virtual libraries, lecture notes, and online discussion boards or social media platforms.

Table 1: Approaches to Blended Teaching

Approaches	Choice
Synchronous physical formats	-Teacher-led Classrooms & Lectures -Hands-on Labs & Workshops -Field Trips
Synchronous online formats (live e-teaching)	-Online Meetings -Virtual Classrooms -Webinars and Broadcasts -Coaching -Instant Messaging -Conference Calls
Self-paced, asynchronous formats	-Documents & Web Pages -Web/Computer Based Training Modules -Assessments/Tests & Surveys -Simulations -Job Aids & Electronic Performance Support Systems (EPSS) Recorded Live Events -Online teaching -Communities and Discussion Forums -Distributed and Mobile teaching

Table 2: Media used in Blended Teaching

Live face-to-face (formal) Instructor-led classroom Workshops Coaching/mentoring On-the-job (OTJ) training	Live face-to-face (informal) Collegial connections Work teams Role modelling
Virtual collaboration/synchronous Live e-learning classes E-mentoring Live video via satellite or videoconferencing	Virtual collaboration/asynchronous E-mail Online bulletin boards Listservs Online communities
Self-paced learning include building: Web learning modules Online resource links Simulations Scenarios Video and audio CDs/DVDs Online self-assessment	Performance supports include building: Help systems Print job aids Knowledge databases Documents and web page Performance/decision support tools

Workbooks CBT (Computer Based Test, CBT training modules) Study guides, manuals, texts	
--	--

Forms of Blended Teaching

There are several models of blended teaching but only six will be explained here for teachers to adopt in education.

1. **Face-to-face Teaching Model:** There is where the teacher delivers instruction or content of the curriculum to the students in a classroom physically with little online instructional resources for students to supplement or revise at home, classroom, or technology laboratory.
2. **Remote blended Teaching Model:** This may also be referred to enriched virtual teaching. It a situation where the teacher delivers the course content online completely but instead of 100% has little face-to-face instruction at the end of the course for clarification, practical, among others. Like a mature programme, the teacher may decide to deliver instruction online during the week and face-to-face interaction with the students at the weekend.
3. **Rotation Teaching Model:** This is where the teacher alternate instructional delivery to students on a fixed point that may involve live (traditional) face-to-face instruction, live online instruction, and web-based instruction for students' self-paced learning. It may involve two of the strategies but must include traditional and online instruction that may be alternated within weekdays or between weekdays and weekend; it all depends on the convenience of the teacher and the students.
4. **Flex Teaching Model:** In this case, the teacher delivers the curriculum content to the students via online (example is recorded lecture) only for self-pace learning but provides live online/on-site support by the teacher to answer questions and give suggestions on schedule. This enhances flexible and adaptive teaching-learning process between the teacher and the students on tutoring and group sessions.
5. **Online Teaching Driver/Enriched Virtual Model:** This is where the teacher uses online teaching platform for instructional delivery of the curriculum content to the students most of the times; the students learn synchronously and come to the teacher or school on optional or required classes like practical.

Principles for Integrating blended Teaching into the Curriculum

As teachers are encouraged to integrate blended teaching into their programmes and course especially in the present era of COVID-19, it is particularly important that teachers in higher institutions observe certain principles for uniformity, guidance, and effectiveness. Such principles are stated thus:

1. There is need for varieties in blended teaching to appeal to different sense organs and accommodate students with different leaning styles and needs. That is, there should be combination of visual, audio, and/or audio-visual channels to provide appropriate requirement for all types of learners for productive learning.
2. Self-paced teaching should be customizable to reflect learners' interests and needs. In teacher-led courses, tutors and facilitators should be able to follow the learners' progress and performance individually.
3. All the instructional aids required for blended teaching should be easily accessed by the teachers and the teaching as well to the students for comprehensiveness. Blended teaching should be interoperable to function across different hardware or software platforms and accessible to all the students participating during study.
4. Blended teaching should be relevant and specific to learners' needs, roles and responsibilities in professional life (knowledge, skills, and values) as contained in the state instructional objectives. For example, it should be segmented by the teacher to facilitate effective delivery without difficulty and to allow students flexible scheduling of time for learning.
5. It should provide opportunities for frequent teacher-learner interaction to sustain attention and promote learning. That is to say that there should be activities for students to perform to ensure active participation during blended teaching. Instructional methods and techniques employed should be used creatively to develop, engage, and motivate learning experience of students.
6. The teachers should be clear with the educational domain that each pedagogical approach and instructional media to combine targets to sensitize for learning. The teacher needs to ascertain how the technologies will enhance specific learning goals, and how it can involve both teachers and students to participate actively and make students more creative learners.

7. A strong blended teaching should remove barriers, support teachers' professional development and help them overcome challenges in teaching profession for job satisfaction and sustenance. That is, it should be easy to use to reduce teacher's burdens on the job and still achieve better result with student's learning and performance than when applying any of the approaches individually.
8. The blended channels used for teaching should also be involved in assessing the students to cover all the domains and learning styles that were utilized during instruction for true measurements of learners' mastery of the objectives. If there was group discussion or classroom instruction during teaching, there should also be group assignment or pen and pencil test for accurate evaluation.
9. Blend teaching should be flexible to accommodate feedbacks from students to make necessary adjustment for improving learning and achievement of the desired objectives. It should rely to an extent on the invaluable feedback of the students for improvement as the teaching progresses. Simply, there should be established method of providing students with information on the progress of performance in any blended teaching.

Factors of Effective Integration of Blended Teaching into the Curriculum

Several factors determine the effective integration of blended teaching into an education curriculum. Such factors range from administrative, teachers, learner, subject content, instructional material, method of teaching, environmental to time factors.

1. **Administration:** In an institution, where there is experience, organized, focused, and dedicated administrator, it is likely that teachers will be encouraged and supported to adopt blended learning but otherwise were not. How informed the administration is determines the willingness to upgrade from tradition to blended teaching at every point in time. It is really the administration that decides why blended teaching, what blended teaching approaches and how blended teaching should be integrated by the teachers into the curriculum of a teacher preparatory programme in higher institutions.
2. **Teacher:** The ability to blend teaching depends of the experience, competence, personality, dedication and emotional status of the teacher and job satisfaction. It depends on the availability and expertise of the teachers or personnel since an experience teacher may have more instructional aids and experience on the best media to blend for effective teaching, hence the willingness. There is no doubt that experience is the best teacher, but it is also believed that new broom sweeps clearer as such the inexperienced or younger teachers,

especially in this technological era, may be zealous integrate blended teaching due to their exposure to the latest technologies during their teacher preparation coupled with willingness to willing to learn more.

3. **Learner Factor:** Blended teaching is to a great extent influence but the learner's age (maturation) of the learner, number of students in the class, individual differences of the learners, interest, and entry behaviour of the learners. That guides that teacher in what to blend, when to blend and how to blend for productive learning among the learners. It also depends on the entry behaviour of the learners to avoid frustration due to lack of active participation and assimilation of the learning experiences.
4. **Subject Content:** The integration of blended teaching is usually determined by objective of the teaching and content of course to be taught. Teacher are advised to select and blend media for instructional delivery based on the objectives and content of the course and the domain learning experience like cognitive, psychomotor, and effective. Each medium in blended teaching is usually selected to enable different types of learners like the auditory, visual, and tactile understand the lesson during the method that favours the leaner.
5. **Instructional Material:** The availability and nature of instructional materials influence blended teaching. Blended teaching can easily be integrated into an education curriculum where the instructional materials are available and easily utilized by teachers for instructional delivery. There is also a need to ascertain how such instructional materials are readily available and accessible by learners for learning.
6. **Method of Teaching:** The method already in use by teachers determines whether it will be easy or not to employ blended teaching. It will be easier for a teacher who has been using mixed traditional method to integrate blended teacher than one who has been addicted to one method of teaching. Integration also depends on the methods of teaching approved for teachers by the school authority, hence it will be difficult where integration of one channel of blended such as online is not approved by the school authority.
7. **Environmental Climate:** This has to do with the school climate, teacher-administration and teacher-students relationship, availability of infrastructure and facilities, physical location, context, and culture of the society in the the school is domiciled. The location of the school and culture of the students influences the integration of blended teaching by teachers. Blended teaching is made more effective where there is conducive environment and technical resources available for integration to take place.

8. **Time Frame:** This is also an important factor since the availability of time guides the teacher on the best blended teaching approaches to integrate into the curriculum. Teachers are motivated to adopt blended learning where there enough time for them to plan, organize, implement, and evaluate students learning outcome without being in hurry and students complains.

Challenges to Integrating Blended Teaching into the Curriculum

To integrate blended teaching into an education curriculum are always faced with lots of challenges, some of which are stated as follows.

1. **Technological aspect:** Blended teaching requires a reasonable technological infrastructure. Wherever this is lacking, it cannot be employed by the teachers effectively. Besides, some the technologies designed may not accommodate all the need of the learners during study which disadvantage some of them.
2. **Pedagogical aspect:** Most teachers lack the competence to plan, organize and implement instruction using blended teaching approaches. Sometimes, teachers find it difficult to evaluate all the domains of education covered in a course using blended learning.
3. **Content-Technology competence:** It is sometimes difficult for teachers to infuse some content area of a subject in blended teaching due to lack of knowledge on the use of certain design like Technical Pedagogical and Content knowledge (TPACK), ASSURE, Universal Design for Learning (UDL).
4. **Social aspect:** Teachers tend to feel isolated and there may not be any instant feedback from students for adjustment, motivation, and sustenance. Teachers may also worried that they will lose their jobs and some of their blended teaching may be recorded and used without their being there. Learners and trainers need to pick up skills for on-line learning and training for professional relevance.
5. **Mind-set aspect:** Blended teaching requires a total change of mind-set which may not be easy with the teachers and students, especially the old ones. Some teachers may not really want to learn any new method of teaching believing that their experience is enough provide learners all the learning experience needed to achieve the stated objectives.
6. **Lack of Support:** There is need for strong support from senior management to teachers for effective blended teaching. There is poor competence of the teachers and in-service training

to upgrade to blended teaching since some of the teachers were trained before the advent of online teaching.

7. **Time constrains:** In most case, there is little of no time to teach traditionally and still blend it with online teaching asynchronously unless where the blended teaching is carried out at the same time as live instructor led teaching or synchronous blended learning. It may also require more time than traditional or online teaching alone depending on the blended teaching approaches, that is, instructional media employed.
8. **Stakeholders:** Major stakeholders are always the greatest limitations to blended teaching integration for some of the are not well informed while others are conservative to the traditional teaching methods.
9. **Frequent advancement in technologies:** Some teachers may feel frustrated dues to refluent advancement in technology and the difficulty in acquiring new teaching and technology skills for relevance.
10. **Lack of in-service training:** The teachers are faced with the difficulty of acquiring new technological teaching skills without being retrained. Most schools in Africa relegate capacity building needs of the teachers to the background especially when there is change in curriculum. The belief is that teachers have acquired much and should concentrate on training others instead of going for retraining.
11. **Isolation:** Both teachers and student sometimes feel isolated where online facilitation and learning constitutes more than seventy percent of the entire instruction. There is absence of psychological relief between the two parties since other aspects of life that may influence learning are not discussed verbally or physically.

Conclusion

Both the paradigm shifts from teacher-centred to learner-centre education and the advent of COVID-19 pandemic has necessitated remote learning in every aspect of human endeavour including agricultural education. Hence, there is need to integrate blended teaching in agricultural education for blended learning to occur and enhance transfer of knowledge, skills, and attitude in an education programme to new generations for sustainable food security. Blended teaching is a combination of offline and online instructional media by a teacher to impart information to the learners for effective learning outcomes. It can be integrated into an education curriculum as a course, part of a course and part of teaching method. Synchronous and asynchronous approaches, various media and blended

teaching models can be used by teachers depending on whichever one that suits the content of the education programme and the learners for effective learning. Teachers are expected to abide by certain principles in integrating blended learning into the curriculum of teacher preparatory programme in universities. Meanwhile, several factors coupled with challenges determine the integration of blended teaching into the curriculum of teacher education.

References

- Azizan, F. Z. (2010). Blended Learning in Higher Education Institution in Malaysia. In Proceedings of Regional Conference on Knowledge Integration in ICT (pp. 454-466).<https://pdfs.semanticscholar.org/9c32/77d83acc61d0f30d79c8dd4a999720d38b3c.pdf>
- Blended Learning in K-12/Guiding Principles of Blended Learning.https://en.wikibooks.org/wiki/Blended_Learning_in_K-12/Guiding_Principles_of_Blended_Learning
- Christensen, C. (2019). Blended Learning: Disruptive Innovation. <https://www.learndash.com/wp-content/uploads/blended-learning-infographic.jpg>
- E-Learning resources. (2012). Retrieved July 31, 2012 from http://www.grayharriman.com/blended_learning.htm
- Ellis, R. A., Steed, A. F., & Applebee, A. C. (2006). Teacher conceptions of blended learning, blended teaching, and associations with approaches to design. *Australasian Journal of Educational Technology*, 22(3). <https://doi.org/10.14742/ajet.1289>.
- Graham, C. R., Borup, J., Short, C. R., & Archambault, L. (2019). K-12 blended teaching: A guide to personalized learning and online integration. Provo, UT: EdTechBooks.org. Retrieved from <http://edtechbooks.org/k12blended>
- Hunt, V. (2018), 6 Major Benefits of Blended Learning. <https://elearningindustry.com/benefits-of-blended-learning-6-major>
- Kaur, M. (2013). Blended learning - its challenges and future. *Procedia - Social and Behavioral Sciences*. 93 (2013), 612 – 617. www.sciencedirect.com
- Khan, B. (2005). *Managing e-Learning Strategies: Design, Delivery, Implementation and Evaluation*, Information Science Publishing: USA.
- Laster, S. G. (2005). Redefining blended learning. Retrieved from www.sciencedirect.com on 1 February 2021.
- Layton, S. (2020). 5 Benefits of Blended Learning for CTE Courses. Retrieved from <https://www.aeseducation.com/blog/benefits-of-blended-learning-for-cte> on 1st February, 2021.

Lynch, R., & Dembo, M. (2004). The Relationship Between Self-Regulation and Online Learning in a Blended Learning Context. *The International Review of Research in Open and Distributed Learning*, 5(2).
<https://doi.org/10.19173/irrodl.v5i2.189>

Musawi, A. S. A. (2020). Blended Learning: Its Principles and Future Prospects.
<https://www.researchgate.net/publication/267513215>.

Peters, M. (2009). Executing blended learning. Retrieved from
<https://www.sciencedirect.com/science/article/pii/S187704281303351X> on 31st July 31, 2012

Pino-James, N. (2015). Golden Rules for Engaging Students in Learning Activities.
<https://www.edutopia.org/blog/golden-rules-for-engaging-students-nicolas-pino-james> 1st February, 2021

Poon, J. (2013). Learning: An Institutional Approach for Enhancing Students' Learning Experiences. *MERLOT Journal of Online Learning and Teaching*. 9(2), 271-289.

Schwartz, K. (2013). Four Essential Principles of Blended Learning.
<https://www.kqed.org/mindshift/30706/four-essential-principles-of-blended-learning>

So, H.-J., & Bonk, C. J. (2010). Examining the Roles of Blended Learning Approaches in Computer-Supported Collaborative Learning (CSCL) Environments: A Delphi Study. *Educational Technology & Society*, 13 (3), 189–200.

Staff, TBS. (2020). Synchronous Learning vs. Asynchronous Learning in Online Education.
<https://thebestschools.org/magazine/synchronous-vs-asynchronous-education/>

Teaching English to Speakers of Other Languages International Association (TESOL, 2020). Five Reasons Why The 70-30 Rule Is Useful In ESL Conversation Classes. <https://ontesol.com/blog/how-to-teach-english/teaching-english-conversation/five-reasons-why-the-70-30-rule-is-useful-in-esl-conversation-classes/>

Woodall, D. (2010). Blended learning strategies: Selecting the best. Retrieved from www.sciencedirect.com on 1 February, 2021.