STAKEHOLDERS` PERCEPTION ON SYNCHRONOUS AND ASYNCHRONOUS FORMATIVE ASSESSMENT OF LEARNING DURING AND AFTER COVID-19

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Abstract
This study assessed stakeholders` perception on synchronous and asynchronous assessment of learning. This study employed the descriptive survey design. Two research questions and two hypotheses were used for the study. 340 stakeholders' views were collated using on-line survey of general public with an instrument titled "stakeholders' perception of on-line formative assessment questionnaire (SPOFAQ). The face and content validation of the instrument was done by three experts in the field of measurement and evaluation. A reliability estimate of 0.86 was obtained using Cronbach alpha with the help of mean and standard deviation while analysis of variance was used to test the hypotheses at 0.05 level of significance. The study revealed that the perception of stakeholders of synchronous and asynchronous assessment of learning is high and positive. The study also found that the difference in the perception of stakeholders on both synchronous and asynchronous learning was significant with that of the parents being the highest followed by lecturers, teachers and students respectively. The study recommends that government and relevant stakeholders adopt swift measures to facilitate the creation of awareness, utilization and implementation of both synchronous and asynchronous formative learning approaches.
Keyword: Stakeholders` perception, synchronous, asynchronous, formative assessment, learning, COVID-19.

Introduction

Corona virus (COVID-19) pandemic has grossly redefined many systems and of which the educational system is not an exception. The pandemic has caused a shift from the conventional face-to-face teaching and learning approach to the digital approach leading to on-line academic transactions between the instructor and the learners for the purpose of learning. It is obvious that learning cannot be said to have taken place without appropriate and adequate assessment (Nworgu, 2015). This entails that learning which is concerned with the acquisition of skills and fundamental knowledge for the purpose of improving mankind is not complete without assessment, this is not just a statement that holds true in an educational context but, in all forms and nature of learning since assessment is required for all kinds of learning. This provides perspective on how much learning has actually taken place, without this, there will be lapses in learning and it will

be difficult to know the exact point that learners lose track. This acquisition of basic knowledge and skills as well as its application to meet the needs of the contemporary society, understanding and identifying career opportunities and the level of preparation of learners can only be ascertained through the process of assessment.

Assessment may be seen as the act or process of gathering data; it is the process adopted by instructors to find out about their teaching and students' learning (Hanna & Dettmer, 2004). According to Wiesnoreva (2012), assessment is a general term which involves the methods used to gather information about children's abilities, attitude, understanding and motivations. It is therefore important to assess learning activities of learners be it offline or on-line. Basically, assessment is classified into two forms: formative and summative assessments. While the summative assessment is done at the end of instruction, formative assessment is done at the course of or during instruction.

Formative assessment may refer to that kind of assessment that is carried out while learning is ongoing for the purpose of making improvement and adjustment on instructional objectives (Nworgu, 2015). In this regard, formative assessment acts like police on the highway as it makes several stops on the learning path to ensure maximum benefit. Formative assessment provides the instructor the opportunity to understand the most effective and efficient approach which the students understand and can learn more; thus, modifies the process for maximum learning outcome. This formative assessment can be done offline and on-line. While offline formative assessment is done without the internet, on-line formative assessment is done over the internet.

on-line formative assessment is that which is carried out within an on-line context with the help of Information Communication Technology (ICT) through the tools of on-line media like the discussion forums, self-test quiz tools, e-portfolios and so on. on-line formative assessment is helpful in improving learners and the development of learning community as it ensures prompt feedback in real time (Gikandi et al., 2011). Over the years, instructors have worked devotedly on on-line assessment of learning outcome (Barber et al., 2015, King & Buchanan, 2015). Lowe, (2015) disclosed that various approaches have been identified: series of on-line quizzes and on-line homeworks. on-line academic transaction of ideas was also identified by (Kent et al., 2016) and (Klisc et al, 2009). on-line peer evaluation and peer assessment (Alvarez et al., 2012), on-line video conferencing (Bower, 2011; Dyment & Dowing, 2018; Okada, & Scott 2015), as well as on-line learning assessment using learning analytic (Martin & Ndoye 2016; Nyland et al., 2017). on-line formative assessment according to Liu & Che (2018), European Distance E-learning Network (EDEN, 2020) can also be administered in two forms namely; synchronous and asynchronous approaches. In synchronous approach, students work cooperatively with teachers through on-line media like zoom, microsoft teams and through direct phone calls. In this case, feedback is achieved in real time whereas, in asynchronous approach, learning is self-paced and feedback is not live, students are separated by environment and time. Google classroom and module which are on-line tools help teachers to provide feedbacks to students through questions such as video response and reflection for learning (Liberman et al., as cited by Jimenez, 2020).

The Smarter Balanced Assessment Consortium (2020) showed that the formative assessment process is a tool that allows teachers and students to provide actionable feedback; this feedback helps make decisions and changes that will improve the learning process. The four-step process includes: clarifying (set learning goals), eliciting (provide proof of learning), interpreting (identify gaps in learning process) and acting (the way forward). This process has provided a blueprint for assessment of on-line learning and also brought concerns to parents, policy makers and other stakeholders in the global community as to ensuring quality learning even in these times.

As reported by Coates (2020), effective on-line formative assessments have proven to be quite more difficult today than at any other time in the past for instuitions than for students especially in this period of Covid-19 pandemic. As such, education system leaders, teachers, lecturers, parents and other stakeholders require a plethora of information about their students in order to begin educational recovery and ensure its quality. Consequently, these data must comprise not just of grades and records but also different aspects of the students' well-being, their social-emotional needs, engagements, and conditions for learning. This will allow the stakeholders to be responsive and prompt to the needs of all students (Jimenez, 2020). These needs, although as human needs cannot be satisfied completely, however, the efforts must be made to yield the desired outputs. The stakeholders' perception of this new system is therefore paramount to its functionality. It is on the strength of this that the researchers have set to see what perceptions the stakeholders hold and to understand how that might affect education and learning as a whole in this pandemic period.

Perception has been variously explained by many scholars. Hanzari, (2014) defined perception as a complex mental activity which explains a keen attention paid to something or experiences. It is the interpretation of stimuli into meaningful phenomena with respect to the experiences a person has gathered. Students` perception include their thoughts, believes and feelings about a person, situations or events around them (Hazari, 2014). The way the students perceive distance type of learning may significantly differ. Moore (1993) propounded the Transactional Distance Theory (TDT). This was done as a justification that distance education is more of psychological than just geographical separation of teachers and learners. The transactional distance theory states that when an instructional designer makes a decision, the decision will result in certain amount of structure, dialogue and autonomy.

That structure of what is designed to be learned, the interaction is the conversation between the teacher and learners and the idiosyncrasies of each learner channeled towards potential self-management and autonomy (Moore & Kearsley, 2012). This study is also built on the theoretical framework of Community of Inquiry (CoI) which was first used by early pragmatists like C.S Peirce, John Dewey and Jane Addams. This model which was later put forward by Garrison, Anderson and Archer in 1999 aims at the organization of on-line learning experience; it is a theoretical blueprint for an ideal plan of an on-line learning environment that can give rise to the creation of inquiry and discourse among students and teachers as well as to facilitate critical thinking. There are

three basic components of CoI; they include: the cognitive, the teaching and the social presence, all of which forms the totality of students' educational experiences. Both theories relate to this study as the indices of the theories form the basic elements in on-line teaching and learning processes.

Karal et al., (2011) reported that students` perception at the completion of course became positive. Students had negative perception of synchronous approaches due to the fact that they did not have advance information and also had prejudice as a result of misinformation but the prejudices were eliminated as the course progressed and they were able to see the opportunities that synchronous approaches provided. Ghazal et al., (2016) revealed that at the initial stage, students had negative perception of synchronous communication due to insufficient information and preconceived notions but their perception changed upon completion of the synchronous approach. Dewi et al., (2018) reported that students had positive perception on the design of asynchronous on-line discussions. Abdallah, (2018) also observed that parents had moderate satisfaction on teachers in using computer packages in teaching but had high satisfaction on students using computer packages to learn. Although, with respect to students` personal development, meeting students` needs via curriculum and the quality of teaching and learning, parents showed low satisfaction about students' results.

Louwrens and Harnett, (2015) reported that students and teachers have positive perception towards on-line approach to learning because they do what is expected of them by engaging behaviourally in relevant activities; the giving and receiving of feedback as well as the drive toward learners centered-activities is evident on cognitive engagement; the advancement of learning communities where students are happy contributing to learning and the design and facilitation of these activities are elicited by emotional engagement. According to Lee (2018), the negative perceptions of parents are as a result of lack of proper information in accessing and utilizing learning management systems, lack of technical support for the required training and ineffective orientation practices. Weissman, (2017) observed that the perception of learners that took part in on-line synchronous discussion was more positive than their counterparts who participated in the asynchronous session of recordings.

Kong (2017) conducted a study on the perception of parents towards e-learning in school education in Hong Kong and found out that parents have basic perception of e-learning, however, the perception is low. More so, According to Soykan (2015) in a study on views of students', teachers' and parents' on the tablet computer usage in education revealed that students, teachers and parents have positive views on on-line learning but no significant difference exists in their perception contrary to the above, Kanthawongs and Kanthawongs (2012) in their study on primary school students, parents and teachers perception on the use of computers, the internet and social networking sites for learning, it was found that students, teachers and parents have positive perceptions of on-line learning and the difference in their perception was significant in favor of the teachers.

Generally, this study sought to determine the perception of stakeholders on synchronous and asynchronous formative assessment of learning during and after COVID-19 pandemic. Specifically, this study will examine the following:

1. The extent of the perception of stakeholders on on-line synchronous formative assessment of learning.
2. The extent of the perception of stakeholders on on-line asynchronous formative assessment of learning.

Research Hypotheses

H0$_1$: There is no significant difference in the mean responses of stakeholders on their perception of on-line synchronous formative assessment of learning.

H0$_2$: There is no significant difference in the mean responses of stakeholders on their perception of on-line asynchronous formative assessment of learning.

Methods

A descriptive survey design was employed in carrying out this study; this was based on the premise that the study sought to describe the perceptions of stakeholders (students, parents, teachers and lecturers) on formative assessment of learning during and after COVID-19. The study was carried out in Nigeria and it focused on stakeholders (students, parents, teachers and lecturers) in Nigeria. An open on-line survey of the general public was used to collect responses from a sample of 340 respondents.

The researchers used a self-developed instrument titled "stakeholders` perception of on-line formative assessment questionnaire (SPOFAQ). The instrument was structured in two sections, A and B; section-A focused on synchronous formative assessment of learning while section-B focused on asynchronous formative assessment of learning. The instrument was face and content validated by three experts in the field of measurement and evaluation from Faculty of Education, University of Nigeria, Nsukka. 25 items were constructed before validation and after the validation, some items were discarded while others were restructured; a post validation figure of 20 items was reached. A 0.86 internal consistency reliability index was evaluated for the instrument using Cronbach alpha method.

The administration of the instrument was done by the researchers using an open on-line survey method in the collection of data. The research questions were answered using mean, standard deviation while the hypotheses were tested using analysis of variance (ANOVA) at 0.05 level of significance. The results obtained were presented in tables.

A benchmark mean of 2.50 for was used by the researcher for decision making. Mean values from 2.50 and above were considered accepted while mean values below 2.50 were rejected.

This was arrived at thus: SA = 4, A = 3, D =2 and SD = 1

Criterion Mean ($\bar{X}$) = $\frac{4+3+2+1}{4} = \frac{10}{4}$ = 2.50

Results

Table 1 Median *responses of stakeholders*` synchronous formative assessment of learning during and after COVID-19

S/N	Item Statements	N	Median	Decision
1	Studying or learning with the teacher and other students on-line is a difficult task	340	2.7941	**A**
2	Listening to lesson audios/video recordings or going through lesson materials when the on-line teaching has ended is a boring experience	340	2.6529	**A**
3	The best kind of learning is the one done at a specified or scheduled date and time	340	3.1794	**A**
4	Learning while the teacher and students are present on-line/ in the classroom enables prompt feedbacks as the teacher will know in real time what the students know and do not know	340	3.3794	**A**
5	Learning with the teacher and students being present at the same time helps the teacher easily adjust instructional objectives when the need arises	340	3.5735	**A**
6	It is better to attend to students' materials, audios, video recordings, documents or pictures while learning is ongoing	340	2.7853	**A**
7	Studying on-line together with the teacher and other students influences personal communications between teachers and students and makes it possible for the teacher to check on students` well-being and general distance learning experiences	340	3.1206	**A**
8	Studying while the teacher is readily available on-line helps students provide feedback with real human connections	340	3.0471	**A**
9	Learning experiences that require the present of both students and teachers at the same time on-line often take more than the required lesson time/period	340	3.0324	**A**
10	When students learn on-line at the same time when the teacher is giving instruction, only a few students stay till the end of the class as majority of students often sign out of the class at will	340	3.2882	**A**
	Ground Mean		**3.09**	**HP**

The result in table 1 above shows the means of responses of stakeholders on synchronous formative assessment of learning; all items indicated mean values above 2.50 which is the criterion mean-indicating agreement of the stakeholders to each of the items. Also, a ground mean value of 3.09 above the criterion mean was attained, implying high perception of stakeholders on synchronous formative assessment.

Table 2 ***Median of the perception of stakeholders' a*****synchronous formative assessment of learning during and after COVID-19**

S/N	Item Statement	N	Median	Decision
11	Learning is challenging when students are not present at the point of given instructions by the teacher(s).	340	3.3000	**A**
12	Students feel isolated and discouraged when they learn in a distance learning environment.	340	2.9588	**A**
13	Using audios/ video recordings or other offline resources to study without the teacher`s supervision makes learning interesting.	340	2.3824	**D**
14	Studying alone offline does not provide real-time interaction and socializing environment between teachers and learners	340	3.3294	**A**
15	When students study on their own without the teacher`s supervision, they take their time before providing feedbacks.	340	3.2647	**A**
16	When students study offline alone, it reduces the work of the teacher as he/she must not be on-line or readily available for learning to take place.	340	2.9324	**A**
17	Studying offline without the presence or supervision of the teacher improves students` ability to study independently on their own.	340	3.1294	**A**
18	Lack of prompt or immediate feedbacks when students study alone offline slows learning.	340	3.1265	**A**
19	Students often forget their assignment and learning tasks when studying offline alone as their attentions can easily be divided	340	3.1029	**A**
20	When students are allowed to learn offline on their own, it reduces the teacher`s chances of having a good classroom management skill.	340	3.1000	**A**
Ground Mean			**3.06**	**HP**

The result in table 2 above indicates that mean responses of stakeholders on their perception of asynchronous formative assessment on all the items is above the

benchmark mean of 2.50, indicating agreement to each of the item statement except for item 13 which has a mean value of 2.38. This implies that the stakeholders disagreed on the item statement. However, a ground mean value of 3.06 was arrived at, meaning that the perception of stakeholders on asynchronous formative assessment of learning is high

Hypotheses

$H0_1$: There is no significant difference in the mean responses of stakeholders on their perception of on-line synchronous formative assessment of learning

Table 3 ***ANOVA summary table on the mean responses of stakeholders***

Variables	Sum of Squares	df	Mean Square	F	Sig.	Decision
Between Groups	3.891	3	1.297	11.029	.000	Sig.
Within Groups	39.515	336	.118			
Total	43.406	339				

Result in table 3 above shows an ANOVA table on the comparisons of the mean responses of stakeholders (students, teachers, parents and lecturers) on their perception of synchronous formative assessment of learning; the data show that a significant difference exists among the mean responses of the four groups (students, teachers, parents and lecturers) since the F-value of 11.029 is significant at .00 level which is less that the set alpha level of 0.05. Thus, the null hypothesis is rejected. This was followed with a post hoc comparison test in table 4 below to reveal where the difference lies.

Table 4 ***Scheffe Post hoc multiple comparison table on the mean responses of stakeholders***

(I) Students, teachers, parents and lecturers	(J) Students, teachers, parents and lecturers	Mean Difference (I-J)	Std. Error	Sig.
Students	Teacher	-.07661	.04336	.375
	Parents	-.35510*	.06791	.000
	Lecturers	-.19420*	.05967	.015
Teacher	Students	.07661	.04336	.375
	Parents	-.27848*	.07147	.002
	Lecturers	-.11759	.06369	.334
Parents	Students	.35510*	.06791	.000
	Teacher	.27848*	.07147	.002
	Lecturers	.16089	.08239	.284
Lecturers	Students	.19420*	.05967	.015
	Teacher	.11759	.06369	.334
	Parents	-.16089	.08239	.284

*. The mean difference is significant at the 0.05 level.

The post hoc result in table 4 above shows that a significant difference exists between students and parents, students and lecturers; however, no difference was found between students and teachers. More so, the difference between teachers and parents was significant but no significant difference exists between either of students and lecturers with teachers. Equally, no significance difference was found between parents and lecturers.

H0$_2$: There is no significant difference in the mean responses of stakeholders on their perception of on-line asynchronous formative assessment of learning

Table 5 ANOVA summary table on mean responses of stakeholders

Variables	Sum of Squares	df	Mean Square	F	Sig.	Decision
Between Groups	7.571	3	2.524	23.294	.000	Sig.
Within Groups	36.404	336	.108			
Total	43.976	339				

Table 5 above is an ANOVA table on the comparisons of the mean responses of stakeholders (students, teachers, parents and lecturers) on asynchronous formative assessment of learning; the result reflects a significant difference among the mean responses of the stakeholders on their perception of asynchronous formative assessment because the F-value of 23.29 is significant at .00 level which is less that the set alpha level of 0.05. This implies that the null hypothesis is rejected. A post hoc comparison test was thus conducted in table 6 below to find out where the difference lies.

Table 6 Scheffe Post hoc multiple comparison table on the mean responses of stakeholders

(I) Students, teachers, parents and lecturers	(J) Students, teachers, parents and lecturers	Mean Difference (I-J)	Std. Error	Sig.
Students	Teacher	.11467	.04161	.057
	Parents	-.39745*	.06518	.000
	Lecturers	-.20802*	.05727	.005
Teacher	Students	-.11467	.04161	.057
	Parents	-.51212*	.06860	.000
	Lecturers	-.32269*	.06113	.000
Parents	Students	.39745*	.06518	.000
	Teacher	.51212*	.06860	.000
	Lecturers	.18943	.07908	.127
Lecturers	Students	.20802*	.05727	.005
	Teacher	.32269*	.06113	.000
	Parents	-.18943	.07908	.127

*. The mean difference is significant at the 0.05 level.

The post hoc result in table 6 above shows that a significant difference exists between students and parents, students and lecturers; however, no difference was found between students and teachers. More so, the difference between teachers and parents, teachers and lecturers were significant. But no significance difference was found between parents and lecturers.

Discussion

The result from Table 1 on the perception of stakeholders on on-line synchronous formative assessment of learning shows that there is a high agreement on the responses of the stakeholders to all the items as each item has mean value above the criterion mean of 2.50 and a grand mean value of 3.09 which means that the perception of the stakeholders of on-line synchronous assessment is at high extent (high perception; **HP**). This agrees with that of Louwrens and Harnett, (2015) who reported that students who participate in on-line synchronous learning usually have positive perception because they tend to be involved behaviorally. This also aligns with the findings of Abdallah (2018) and equally that of (Ghazal et al., 2016; Karal et al., 2010) who in their studies reported that students usually have negative perception of synchronous learning due to lack of proper knowledge but that upon completion of courses, the perception of students/teachers towards synchronous learning usually become positive. The implication of this finding is that on-line synchronous formative assessment encourages improvement of students and positive feedbacks for students, teachers, lecturers, and parent.

The result from Table 2 of stakeholders` perception of on-line asynchronous formative assessment shows that the mean values for all are above the criterion mean of 2.50 which implies that the agreement of stakeholders on these items except for item 13 with the mean value of 2.38 which is below the benchmark mean of 2.50, implying disagreement. This means that the stakeholders disagreed that when audios, video recordings or other offline resources are used to study without the supervision of the teacher, learning will not be interesting. However, a ground mean value of 3.06 from table 2 means that there is high perception (**HP**) of the stakeholders of on-line asynchronous formative assessment. This result is strengthened by the findings of Dewi et al., (2018) who reported that the perception of students on asynchronous on-line learning is positive. Contrary to this view (Weissman, 2017) in his study believed that an on-line synchronous learning yields more positive perception than asynchronous learning. Perhaps, this contradiction may be due to the area where this study was conducted and the category of respondents used. The implication of this finding is that asynchronous assessment improves students' learning; however, it may improve even better when learners are being monitored while they learn at their space.

The result from the ANOVA summary table in Table 3 above on the mean responses of stakeholders on their perception of on-line asynchronous formative assessment shows that a significant difference exists in the perception of the stakeholders on synchronous

learning. A Scheffe post hoc test was therefore conducted in Table 4 to reveal where the difference lies, it was found that the difference in the perceptions of students was lesser than that of lecturers and parents respectively whereas no difference was found in the perceptions of teachers and students. More so, the difference in the perceptions of teachers and parents was significant with parents having a higher perception but no significant difference in the perception of teachers with lecturers. Also, the difference in the perception of parents and lecturers was not significant. This finding disagrees with the result of Soykan (2015) that no significant difference exists in the perceptions of students, teachers and parents on on-line learning but it agrees with the finding of Kanthawongs (2012); however, while Kanthanwongs (2012) reported teachers as having the highest perception, this study finds the highest perception in favor of the parents This may probably be that the expectations of parents generally on on-line learning is higher compared to that of the stakeholders.

The ANOVA result conducted in Table 5 indicated that a significant difference exists among the perception of stakeholders of on-line asynchronous formative assessment. A Scheffe post hoc result was further carried out in Table 6 to reveal where the difference lies; the result showed that a significant difference exists in the perception of students with parents and students with lecturers, with parents having a higher perception followed by lecturers but no difference was found in the perception of students with teachers. Also, the difference in the perception of teachers with parents and teachers with lecturers was significant with the perception of parents being higher. Equally, it was found that no significant difference exists between parents and lecturers in terms of their perception of asynchronous learning. The result agrees with the finding of Kanthaanwongs (2012) that a significant difference exists in the perceptions of students, teachers and parents on e-learning (on-line) but, it however disagrees with the findings of Soykan (2012); Kong (2012) who reported that the perception of parents on e-learning is low. This difference may be on the premise that both studies were conducted in different locations.

Conclusion

Based on the findings of this study, it is thus concluded that the perception of stakeholders (students, teachers, lecturers and parents) of on-line synchronous and asynchronous formative assessment is high and positive. Consequently, the perceptions of these stakeholders (students, teachers, lecturers and parents) differ with parents having the higher perception followed by lecturers, teachers and students respectively.

Recommendations

In line with the findings of this study, these recommendations were made**:**

1. Orientation programmes, workshops and seminars should be organized for relevant stakeholders on the benefits and the opportunities that synchronous and asynchronous assessment present so as to equip the stakeholders with relevant and available tools and information that are needed for effective utilization of these approaches during and after this period of Covid-19 pandemic.

2. Government and relevant stakeholders should intensify efforts to make sure that these approaches are integrated in the curriculum and duly utilized by teachers, lecturers and learners during and after Covid-19 pandemic.
3. Provisions should be made for keen supervision of students or learners while having their synchronous or asynchronous sessions.

Declaration of Conflict Interests

The authors declared no potential conflicts of interests with respect to the authorship and/or publication of this article.

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