STUDENTS’ PERCEPTIONS OF USE OF E-LEARNING IN SCIENCE EDUCATION

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Abstract
The study was carried out to determine students’ perceptions of use of e-learning in science education. The study was carried out in Alvan Ikoku University of Education Owerri Imo State. The population consists of all 300 level science students in the faculty of sciences of the institution. A sample of 135 students was selected through stratified random sampling for the study. The descriptive survey research design was adopted in carrying out the study. The instrument for data collection was a 12 items likert 4-point type questionnaire titled “E-learning and science Education” (ELSE). It had reliability of 0.78 determined through cronbach’s alpha method. The data generated was analyzed using mean and standard deviation to answer research questions while the hypothesis was analyzed using t-test and tested at 0.05 level of significance. The result of the study revealed that students have positive perceptions towards use of e-learning in science Education. Based on the result, it was recommended that, teacher training intuitions should employ e-learning in teaching science students to enable them do same during their professional practice.

Keywords: E-learning, students, science teachers, perceptions.

Introduction
The modern day technology has vigorously revolutionized the education sector. The new technologies have brought changes in pedagogy and curriculum content and have been instrumental in increased academic productivity and teaching effectiveness (Kavitha and Sundharavadivel, 2012). Nwana (2012) noted that, there is growing concern for the use of ICT resources such as the computer, scanner, printer, internet, intranet, e-mail, videophone systems, teleconferencing devices, wireless application protocols (WAP), radio and microwaves television and searchlight, multimedia projector in curriculum implementation.

E-Learning refers to the application of various information communication and technology facilities in education. Markus (2008) defined it as a learning process created by interaction with digitally delivered content, network-based services and tutoring support. E-learning is any technologically mediated learning using computers whether from a distance or in face-to-face classroom (computer assisted learning), it is a shift from traditional education or training to ICT–based personalized, flexible, individual, self–organized, collaborative learning based on a community of learners, teachers, facilitators experts (Olojo, Adewumi&Ajisola, 2012). Oye, Salleh and lahad(2010) noted that, e-learning is the use of information and communication technology e.g. internet, computer, mobile phone, learning management system (LMS), televisions, Radios and others to enhance teaching and learning activities. E-learning is a unifying term used to describe the fields of online learning web-based training and technology delivered instructions.

E-learning can be self–paced in which case the individual can learn at his or her own free period, the class can be communicated virtually, instruction can be communicated virtually, instructors and students are located in different part of the global and take part in class wherever it is convenient for them. The
flexibility of e-learning makes it the most suitable means of education in this part of the world (Adeola, Adewale & Alese, 2013). According to Nwana (2012), E-learning as an aspect of ICT is relatively new in Nigeria educational system. It is a departure from the conventional approach in curriculum implementation. The main purpose of e-learning is to transform the old methods and approaches to curriculum implementation and not to silence the curriculum or to extinguish or erase the contents of curriculum. Learning delivery is the most often cited advantage of e-learning and includes increased accessibility to information, ease in updating content, personalized instruction, ease of distribution, standardization of content, and accountability.

E-learning is an increasingly prevalent, viable, and fully recognized method for teaching and learning science (Dede, Brown–l'Bahy, Keteihut, &whitehouse; 2004). According to Liverpool,Marut, Ndam and Oti (2010),Yaakub and Finch (2010) in Elijah (2012) e-learning will not only help to make the teaching and learning of science and mathematics to share in educational revolution which e-learning brings into educational system but also to tap the benefits of a more effective method of teaching and learning. E-learning has no rival when it comes to generation of intrinsic motivation and initiation of organized active learning in mathematics and science education as it promotes efficient means of self-study cum frequent testing in the form of formative evaluation which engender proper monitoring of educational progress and periodical achievement(Kajetanowtez&wierzejewski ,in Elijah; 2012). The National Science Teachers Association (2007) supports e-learning as a promising way to:

- More effectively provide access to certain science concept and pedagogy when appropriate tools are incorporated for scientific observation, measurements, and investigations (NRC 1996).
- Give service educators opportunities to experience firsthand, the appropriate use of technology in teaching and learning, and increase their confidence in using these tools in their own practice.
- Meet the needs of students who have learning styles conducive to and preferences for learning and interacting in an online environment (Dede, 2005).
- Reduce the isolation of science educators – especially those in rural areas or teaching specialized science subjects by providing and expanding access to colleagues and experts.
- Provide diverse learners both prek-16 students and educators – with equitable access to high-quality courses, content, learning experiences and instructors by overcoming barriers of place and time (Linn &Hsi, 2000).
- Engage a greater number of teachers in ongoing, highquality professional development.
- Provide remote access via computers and networks to scientific instruments that allows students and teachers to conduct scientific investigations that might otherwise be unavailable to them (NACOL, 2008).
- Provide future workers with strong skills and fluency in the convergence of media, which are critical to succeed in the 21st-century workplace (BHEF, 2005).

The e-learning is an improvement on the old way of teaching and learning science which is teacher centered and should be given great attention in other to improve the nation science education.

**Statement of problem**
The teaching and learning sciences in our institutions have been deemed by the traditional teaching strategies which
is not students centered. However, the advent of ICTS through e-learning has come to inject transformation from the old approach to the innovative approaches which are effective and efficient in curriculum implementation. This innovation in science education has been bedeviled with a lot of challenges.

Therefore, this study was carried out to answer the question what are students’ perceptions of use of e-learning in science education?

**Purpose of the study**
The main purpose of the study is to determine students’ perceptions of use of e-learning in science education. Specifically the study will determine whether:

- Students have positive perceptions towards use of e-learning in science education.
- Male and female students differ in their perceptions towards use of e-learning in science education.

**Research questions**
The following research questions were posed for the study

1. What are students’ perceptions towards use of e-learning in science education?
2. What is the difference between male and female students’ perceptions towards use of e-learning in science education?

**Hypothesis**
There is no significant difference between male and female students’ perception towards use of e-learning in science education.

**Methodology**
The study adopted the descriptive survey research design in determining student science teachers’ perceptions of e-learning and science education.

**Result**
RQ1: What are students’ perceptionstowards use of e-learning in science education?

Table 1: Summary of students responses

<table>
<thead>
<tr>
<th>S/N</th>
<th>Item</th>
<th>Male</th>
<th>Female</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>E-learning improves pedagogical method in science Education</td>
<td>3.02</td>
<td>3.00</td>
<td>1.10</td>
</tr>
<tr>
<td>2.</td>
<td>E-learning expands access to quality of science education</td>
<td>2.91</td>
<td>2.94</td>
<td>1.1</td>
</tr>
<tr>
<td>3.</td>
<td>E-learning reduces difficulties associated with space and time in science education</td>
<td>2.85</td>
<td>2.90</td>
<td>1.08</td>
</tr>
<tr>
<td>4.</td>
<td>E-learning creates leaning environments that promotes active learning and critical thinking in science education.</td>
<td>3.10</td>
<td>2.95</td>
<td>1.12</td>
</tr>
<tr>
<td>5.</td>
<td>E-learning enhances knowledge creation in science education</td>
<td>3.00</td>
<td>3.03</td>
<td>1.11</td>
</tr>
<tr>
<td>6.</td>
<td>Collaborative learning in science education is encouraged through e-learning.</td>
<td>2.73</td>
<td>2.71</td>
<td>1.10</td>
</tr>
<tr>
<td>7.</td>
<td>E-learning helps in learning the right skill required to teach science students.</td>
<td>2.80</td>
<td>2.85</td>
<td>1.01</td>
</tr>
<tr>
<td>8.</td>
<td>E-learning enhances self – paced and self- based learning</td>
<td>2.92</td>
<td>2.83</td>
<td>1.00</td>
</tr>
<tr>
<td>9.</td>
<td>Instant sharing of experience and best practices in science education is enhanced through e-learning.</td>
<td>2.82</td>
<td>2.90</td>
<td>1.11</td>
</tr>
<tr>
<td>10.</td>
<td>E-learning enables motivation among students in science education.</td>
<td>3.01</td>
<td>2.00</td>
<td>1.10</td>
</tr>
<tr>
<td>11.</td>
<td>Community of practices in science education is created through e-learning.</td>
<td>2.77</td>
<td>2.81</td>
<td>1.02</td>
</tr>
<tr>
<td>12.</td>
<td>E-learning improves students interest and confidence in learning sciences</td>
<td>2.04</td>
<td>3.06</td>
<td>1.08</td>
</tr>
</tbody>
</table>

Average mean response

Table 1 shows that all items were accepted as they had mean responses above the scale mean of 2.50. Also, the average mean of 2.92 is greater than instrument scale mean. This implies a positive perception among the students towards use of e-learning in science education.

RQ2: What is the difference between male and female students’ perceptions of use of e-learning in science education?
Table 2: Summary of difference in male and female responses

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Diff. in mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>60</td>
<td>2.91</td>
<td>1.05</td>
<td>0.01</td>
</tr>
<tr>
<td>Female</td>
<td>75</td>
<td>2.92</td>
<td>1.08</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows that the male students had mean response of 2.91 and standard deviation of 1.05, while their female counterparts had 2.92 and standard deviation of 1.08, this gave a minor difference in mean response of 0.01 in favour of the female students.

HO\(_1\): There is no significant difference between male and female students’ perception towards use of e-learning in science education.

Table 3: Summary of t-test analysis

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Df</th>
<th>t(_{cal})</th>
<th>t(_{0.05})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>60</td>
<td>2.91</td>
<td>1.05</td>
<td></td>
<td>0.06</td>
<td>1.64</td>
</tr>
<tr>
<td>Female</td>
<td>75</td>
<td>2.92</td>
<td>1.08</td>
<td>133</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows that, the calculated t-value (0.06) is less than the table t-value (1.64) at 0.05 level of significance and degree of freedom 133. Based on the result the null hypothesis is upheld at 0.05 level of significance.
Discussion
The result of the study revealed that the items on the questionnaire had mean responses greater than the instrument scale mean of 2.50. Therefore they were all accepted. This implied that students had positive perceptions towards use of e-learning in science education. This showed that e-learning improved pedagogical methods, expands access to quality education, enhances collaborative learning, enhanced self-paced and self-based learning etc. Also there was no statistical difference between the perceptions of male and female students towards use of e-learning in science education. These results are in agreement with the findings of (Olojo, Adewumi, and Ajisola (2012), NSTA (2008) and Abdullahi (2013) who variously outline the contributions of e-learning in education.

Conclusion
The result of the study showed that students hold positive perceptions towards use of e-learning in science education. This showed that use of e-learning will revolutionize science education.

Recommendations
Based on the result of the study the following recommendations are made:
1. Science teacher training institutions should employ e-learning in teaching science students to enable them apply same during their professional practices.
2. Teacher training institutions should put in place ICT facilities to enable teachers use them in teaching.
3. There should be stand-by generators to enable teachers use the ICT facilities when there is no light.
4. Workshops and seminars should be organized by government to train teachers on use of e-learning in teaching science.
5. All science teachers should be ICT compliant out as to practice e-learning.

References


