Evaluation of E-resources for its Authenticity

Shilpi Kumari

School of Education, Mahatma Gandhi Antarrashtriya, Hindi Vishwavidyalya, Wardha, Maharashtra, India

Corresponding author: shilpik27@yahoo.com

ABSTRACT

It is now a well known fact that integration of ICT with teaching-learning process enhances its quality and effectiveness in terms of incorporation of a variety of facts and data and increased collaboration among the students and that between the students and the teachers and hence their deeper conceptual understanding. There are plenty of e-resources available which may be utilized by the teachers and the students for discussion on the topics to be learnt. There are many e-resources which are highly contributing but still are some other resources which are less beneficial and may even impede the quality of learning. Now the questions arise- what are the criteria and strategies the teachers and students should adopt to evaluate the authenticity and effectiveness of the e-content to be used for learning and how the skills of evaluation of e-resources can be fostered in the students through the school curriculum. The present article explicates the criteria and strategies required by the students to assess the reliability of e-resources, especially in the subject of science. It also highlights the strategies utilized by the teachers and students of the so-called smart schools to identify and select the e-resources for learning.

Keywords: E-resources, ICT integrated teaching-learning process, smart schools, online resources

Many teachers, students as well as parents consider e-resources as effective as printed materials and in many cases even more effective for learning due to its faster accessibility (Habiba & Chowdhary, 2012; Satpathy & Rout, 2010; Brandstrom, 2011) and availability in a variety of formats capable of providing personalised experiences to different types of learners (Natrajan, 2011), particularly in science where incorporation of audio, images, videos and animations become a must to describe the abstract science concepts. Many teachers and students, however, are not equipped with the skills to search and retrieve the e-resources efficiently (Habiba & Chowdhary, 2012; Galhoni *et al.,* 2011; Natrajan, 2011). In some of the cases it has been found that the teachers are not adequately aware of the facilities available at their end to access and integrate the e- resources with their classes (Gathoni, Gikandi, Ratanya, Njoroge, Wasike, Kiilu, & Kabugu, 2011). On the other hand, in many other cases, the teachers utilize a number of e-resources for classroom transaction, but are either not acquainted or less concerned about the criteria of evaluating the authenticity and effectiveness of these resources. The teachers and students need to be trained about the strategies of evaluating the authenticity of e-resources for ensuring the benefits of these resources in learners' conceptual understanding (Natrajan, 2011).

The Criteria for Evaluating the Authenticity of E-Resources

Many criteria and strategies have been suggested by different authors for evaluating the authenticity of e-resources (www.ed.ac.uk; www.ideals.illinois.edu>handle; www.library.ucsc.edu; Bearman & Trant, 1998; Natrajan, 2011; Anup, 2011, Ghosh & Das, 2007; Kurilovas, 2006). Before using information found on the internet for assignments and projects, it is important to judge its accuracy and to establish that the information comes from a reliable source.

User friendly interface of the e-resource

Prior to evaluate the authenticity of e-resources it

is necessary to find out whether these are easy to install and use. Otherwise, the resource may be authentic but of no utility. There are also many other criteria to assess the user friendly interface of the e-resources. Does it contain proper navigation- from one page to another; from upper part of the page to the lower part and from one learning object to another? Does it have the search option to explore through different uploads in the e- resource? Does it have the helpdesk and FAQ options for assistance to the learners while searching through the e-content? Does it have any feedback system in the form of suggestion box, like and comments (Gathoni *et al.,* 2011).

Now a days, user friendly interface of online resources is also checked for the feature that whether does it provide web 2.0 features of collaborative development of e-content like wikieducator, wikipedia, wikispaces, blogs and groups (Kurilovas, 2006; Seethamraju, 2014, http://m.timesofindia.com). It also maintains the archive for storing the earlier edits or revisions of the e-content and includes important links related to the content. Does it offer the feature of creating e-book to be utilized for the learners?

For evaluating user friendly interface of e-resources in science teaching internal integrity of different learning objects in the e-content is highly desirable (Bearman & Trant, 1998). There must be synergy among different media components of the e-content. For assessing the learners' understanding about certain concepts, the assessment activities can be designed in the form of certain video games and animations where the learners are provided with the options to answer the questions with their own pace.

In smart schools, particularly in science, user friendly video games and animations are accessed (Chemcollective; The molecular workbench) or designed and utilized for learning various abstract science concepts as well as assessment. Teachers and students are part of various science groups and blogs (like Scitable-nature publishing group; NASA Education, National Lab Network, Edmodo Science community). They also create their own groups and blogs to share their views with other students (Seethamraju, 2014; Chen, Gallagher-Mackay & Kidder, 2014). They are also the members of famous governmental, non-governmental and international

organisations like NCERT (E-Pathshala), NASA, ISRO, non-governmental orgainisations like Khan Academy and Byjus Academy which are working for development of e-content for different classes of the school. In place of simple text, these are utilizing multimedia e-content to enhance comprehensibility of the concepts.

Audience of the e-resource

While evaluating the authenticity of e-resources at the school level, the teacher must keep in mind who is the intended audience of the e-resources. It is found in many cases that the teachers are not much concerned about the age or grade level of the students while selecting the e-resources. The science teachers generally follow wikipedia for teaching and learning of different science concepts which are common to academics, general public as well as school children. Natrajan (2011) enlisted a number of e-resources developed in India by governmental and non-governmental organisations like NCERT (e-pathshala); CBSE manuals; e-gyankosh, NPTEL, Learning Object Repository of the Consortium for Educational Communication, OSCAR from Eklavya, Rai Open Courseware, National Science Digital Library (NSDL). In India about 29.20% people including many teachers are unfamiliar and about 18.80% people are unsure about OERs (Dhanrajan & Abewardina, 2012). In smart schools the teachers particularly science teachers are found to be relatively more aware about the mobile apps and web based apps (both online and offline apps) to be used for their classes as compared to other schools. They largely utilize open educational resources for completing their works. They seek for whether the online resources or e-content that they are about to use, appropriately address the target audience and does it fulfil the requirements of a particular group of students for their assignment and project works (Maheshwari, 2017).

Authority of the e-resources

For establishing the authenticity of e-resources, its authority is a key aspect (Peruginelli, 2006). It is to identify the reputation of the author or the team of authors involved in development of the e-resources. The reputation of the author, her/his qualifications and expertise in the concerned area, the quality of references followed by the author, the quality of

other published works of the author, the author's works cited in bibliography section of other authors' works in the same area of knowledge should be assessed carefully, particularly if the e-resource is self published in the form of a e-book, wikibook, blog or a website. In case of the e-resource published by certain publisher, institution, university or any other organisation, the brand or reputation of the organisation is to be recognised the foremost. If it is published by certain private institution or non-governmental organisation, it becomes a must to determine whether the e-resource is an outcome of certain project funded by some national or international organisation. Is there any peer review system for editing the e-content (Hylen, 2005)? Are different media or learning objects used for presenting the e-content are adequately satisfactory (Maceviciute & Wilson, 2008)? Many teachers may be aware of OERs but do not understand OER Licensing (Bolkan, 2017). If the e-resource is an open courseware where all the users can contribute in development of the e-content and participate in its editing, certain regulations must be set for all the users to maintain the accuracy of the e-content (Natrajan, 2011).

In smart schools, the teachers particularly science teachers are found more concerned about the references cited by the author/s for developing the e-content. Even the virtual science kits, in the form of simulations, graphs and video clips, are assessed in terms of its authority (Pacific Policy Research Centre, 2010). If the teachers maintain the e-book, blog or forum, they always provide data or references for their claims and explanations (Directorate-General for Internal policies, 2015).

Currency of the e-resource

While selecting any e-resources, it is expected on the part of the users that they should be careful about the date on which the website is created or online resource is uploaded (Gakibayo, Ikoja-Odongo & Okello-Obura, 2013)? It must give a clear indication of the timeliness of the information. If the e-resource is an old one it must be supplemented with recent e-resources developed in the same area of knowledge. It should also be assessed whether the links provided in the e-resource for extension of the knowledge are actually working? Now a days e-resources particularly OERs are regularly

updated or edited by the author/s to satisfy the queries of the users/learners, incorporate recent advancements in the area of knowledge and enhance its quality in terms of its content as well as user friendly interface (Khan, 2015). In smart schools, the teachers particularly science teachers are found more concerned about the currency of the e-resources (Chen, Gallagher-Mackay & Kidder, A., 2014; Pacific policy Research centre, 2015). The science teachers keep pace with recent activities, uploads and edits in the previous posts of science fora and blogs which they are the members of.

Purpose of the e-resource

Success of an e-resource depends upon its purpose of development. Its objectives must be clearly defined and its content must adequately address these objectives (Cook & Dupras, 2004). The learning objects incorporated in the content of the e-resource should also fit into its objectives.

Reliability of the Open educational resources and web 2.0 based resources

Open educational resources where the users can also contribute in development of e-content, the reliability of e-content is a major issue. As the contents of open educational resources are to be openly and freely shared, these must be licensed in a manner that promotes the desired objective of the development of the e-resource (Natrajan, 2011; Anup, 2011). There must be some peer review system while developing OER resources in the form of an open source project (Hylen, 2005). In some smart schools the teachers organise their own editorial to set the standards for selection of OERs and web 2.0 resources as references for the syllabus of different subjects, particularly science (Directorate-General for Internal policies, 2015).

Coherence and consistency between a particular e-resource and others in the same context

For evaluating the e-resources, one of the best criteria is to find out how consistent is the content of an e-resource with that of other concurrent e-resources belonging to the same area of knowledge and the similar setting of the research or study as well as containing more or less similar references for the data or facts included (Bearman & Trant, 1998).

Multidisciplinary or generic database of the e-resource

Gathoni, *et al.* (2011) found that the learners are more interested in search of multidisciplinary or generic e-content on different subject topics rather than subject specific e-content. Thus, efforts should be enhanced in promoting generic databases. The projects focusing on development of open educational resources must include multi-disciplinarity of the e-content as one of the criteria for enhancing its utility. It should also take care of the multicultural context of the target audience so that the users find the e-resource linked to their socio-cultural context which subsequently enhances its utility.

Identifying the authentic educational websites

If an educational organisation has a trademark on their name, their website usually matches the organisation name. If the website does not have a contact us page, it may be a fake website. An educational website with excessive use of poor grammar and spelling in its content disqualify it to be used as a learning resource. A domain WHOIS lookup web service can be used to see who owns the domain of the educational website. If the website is legitimate and secure, like Webnames, it will have HTTPS on the URL and a lock icon. If the website does list contact information, call, write or email the site using their contact details, to check if it works. If the domain name is typed into Google and if it is a real site, there should be links to that website from other websites. If the website's domain name followed by "reviews" is typed into a search engine, it generates search results for other people's experiences in dealing with the website. If majority of people's comments are negative, the educational website should be excluded from the reference list (Hall, 2013; Rappoport, 2016)

Fostering the skills of evaluation of e-resources in the learners through the school curriculum

In the age of information, the learners need to locate and evaluate the e-resources carefully. In online learning environment where the amount of information doubles every two years, students must be instilled with the skills of assessing the reliability of the online resources (Farmer, 2011). For fostering the skills of evaluation of e-resources in the learners, they should be taught about these skills directly through the classes of computer science and also indirectly through other subjects in an integrated manner. In smart schools, the learners are encouraged to take up the tasks of assignment and projects online. The classes are usually run in blended manner, particularly in science. Online resources are part of learners' everyday learning. They work online and share their views with the help of online forum, portfolio, or blog with their peer and teachers. This day to day exercise with online resources help them conceptualise and develop the skills of evaluating these resources (McLoughlin, 2011). Some studies (William, 2004) also revealed that if the teachers motivate the learners to utilize the e-resources, not directly emphasizing on its effectiveness, but on its other aspects like its faster accessibility and availability in large quantity, the students gradually become more engaged in e-learning, realise the importance of these e –resources and also generate the skills of evaluating the online resources.

While utilizing the e-resources, if the learners are directed to cite the references of these resources in their assignments and also to find out whether other related e-resources also follow these references, they become automatically aware about different strategies and skills of evaluating the authenticity of e-resources. How to evaluate the e-resources related to a particular topic of science can be a topic of assignment for the students. How to search and evaluate the important web links associated with learning of science can be a part of the syllabus of science (Davis, 1997). Thus, the schools can work towards development of strategies and skills of evaluating the authenticity of the e-resources among the learners.

CONCLUSION

User friendly interface, authority, currency and purpose of e-resources, coherence among related e-resources, multidisciplinarity of the e-content are the major criteria to be utilized by the teachers for evaluating the e-resources as discussed in different fora. In smart schools, particularly the science teachers emphasize on user friendly video games and animations developed by the experts,

online groups and blogs maintained by the science community to share and disseminate ideas for e-learning or blended learning. The students are supposed to maintain online portfolio, blog or discussion groups for carrying out their assignments online. Their regular exercise with online resources for accomplishing various tasks consecutively develops in them the skills of evaluating the e-resources for its authenticity.

REFERENCES

Anup, D. 2011. Emergence of open educational resources (OER) in India and its impact on lifelong learning. *Library Hi Tech News*, **28**(5): 10 – 15.

Bearman, D. and Trant, J. 1998. Authenticity of digital resources: Towards a statement of requirements in the research process. Retrieved from http://www.geo.upm.es/postgrado/CarlosLopez/papers/AuthenticityOfDigitalResources.pdf

Brandstrom, C. 2011. Using the internet in education-Strengths and Weaknesses. A qualitative study of teachers' on the use of the internet in planning and instruction. Retrieved from http://www.diva-portal.org/smash/get/diva2:438827/FULLTEXT01.pdf.

Bolkan, J. (September 9, 2017). Most educators aware of OER, don't understand OER licensing. Retrieved from https://thejournal.com/articles/2017/09/21/report-most-educators-aware-of-oer-dont-understand-oer-licensing.aspx

Chapter 7: Choosing and using instructional resources. Retrieved from https://www.nap.edu/read/5287/chapter/8

Cook, D.A. and Dupras, D.M. 2004. A practical guide to develop effective web based learning. *Journal of General Internal Medicine*, **19**(6): 698-707.

Chen, B., Gallagher-Mackay, K. and Kidder, A. 2014. *Digital Learning in Ontario Schools: The 'New Normal'*. Toronto: People for Education.

Davis, B.G. 1997. Chapter-7: Choosing and Using Instructional Resources. *Science Teaching Reconsidered: A Handbook,* pp. 42-52. Washington, DC: National Academy Press.

Dhanarajan, G. and Abeywardena, I.S. 2012. A study of the current state of play in the use of open educational resources in the Asian region. Unpublished report of a project on open access and quality in Asian distance education.

Directorate-General for Internal policies 2015. Innovative Schools: Teaching & Learning in the digital era. Retrieved from www.europarl.europa.eu/

Evaluating the quality and Credibility of your sources. Retrieved from ibrary.ucsc.edu/help/research/evaluate-the-quality-and-credibility-of-your-sources

Farmer, L. 2011. Information competency and e-learning. In Wang, Victor C.X. (Ed.), *The Encyclopedia of E-leadership*, USA: Information Science Reference. **1**: 373-390.

Gakibayo, A., Ikoja-Odongo, J.R. and Okello-Obura, C. 2004. Retrieved from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2055&context=libphilprac

Ghosh, S.B. and Das, A.K. 2007. Open access and institutional repositories: a developing country perspective – a case study of India. *IFLA Journal*, **33**(3): 229-50.

Gathoni , N., Gikandi , J., Ratanya, F., Njoroge, N.E., Wasike, E., Kiilu, D. and Kabugu, A. 2011. Monitoring and evaluation of electronic resources in academic and research institutions in Kenya- Summary Report. Retrieved from http://www.inasp.info/uploads/filer_public/2013/04/09/monitoring_and_evaluation_of_e-resources_in_ke__summary_report.pdf

Google groups help 22k govt school teachers to learn, share, innovate. (May 27, 2016). Retrieved from https://timesofindia.indiatimes.com/city/bengaluru/Google-groups-help-22k-govt-school-teachers-to-learn-share-innovate/articleshow/52458406.cms

How to evaluate website content. Retrieved from https://www.ed.ac.uk/information-services/library-museum-gallery/finding-resources/library-databases/databases-overview/evaluating-websites

Hylen, J. 2005. Open educational resources: opportunities and challenges. Retrieved from https://www.oecd.org/edu/ceri/37351085.pdf.

Habiba, U. and Chowdhary, S. 2012. Use of electronic resources and its impact: A study of Dhaka University library users. *Eastern Librarian*, 23(1): 74-90.

Hall, D. 2013. How to determine if a website is a fake, fraud or scam. Retrieved from https://blog.webnames.ca/how-to-determine-if-a-website-is-a-fake-fraud-or-scam/

Kurilovas, E. 2006. Virtual Learning Environments: Benefits and Potentials to Support Social Constructivist Pedagogies. In Proceedings of the 2 International Conference "Informatics in Secondary Schools: Evolution and Perspectives". Vilnius, Lithuania, 7–11 November 2006. Selected papers, TEV, 2006, p. 166–175.

Khan, B.H. 2015. Introduction to E-learning. In B.H.Khan & M.Ally (eds.), *International Handbook of E-Learning,* (vol. 1, pp. 1-40). New York: Routledge.

Maceviciute, E. and Wilson, T.D. 2008. Evaluation of learning objects from the user's perspective: The case of the Euridice Service. *International Journal of E-Learning & Learning Objects*, **4**: 82-95.

Maheswari, V.K. 2017. A new vision in education. Retrieved from http://www.vkmaheshwari.com/WP/?p=2420

Natrajan, M. 2011. Exploring the e-resources for educational use. *International Journal of Information Dissemination and Technology*, **1**(4): 193-196.

Peruginelli, G. 2006. Evaluation criteria of legal electronic resources. A case study of Italian legal web resources selection. *Informatica e diritto*, **15**(2): 211-243.

Rappoport, V. 2014. 6 Ways to spot a scam website in less than 30 seconds. Retrieved from http://www.highya.com/articles-guides/6-ways-to-spot-a-scam-website-in-less-than-30-seconds

McLoughlin, C. 2011. Leading pedagogical change with innovative web tools and social media. In Wang, Victor C.X. (Ed.), *The encyclopedia of e-leadership*, (vol.1, pp.-1-11). USA: Information Science Reference.

Principles of selection of e-resources. Retrieved from www.ideals.illinois.edu>handlePacific Policy Research center (2010). 21st century skills for students and teachers. Honolulu: Kamehaeha schools.

Satpathy, S.K. and Rout, Biswanath 2010. Use of E-Resources by the Faculty Members with Special Reference to CVRCE, Bhubaneswar . *Journal of Library and Information Technology*, **30**(4): 11-16.

Seethamraju, R. 2014. Effectiveness of using online discussion forum for case study analysis. Retrieved from http://dx.doi.org/10.1155/2014/589860