Original Research Article

E-learning Resource for the Disciplines and Ideas in Social Sciences

.

ABSTRACT

The study developed and validated an e-learning resource in teaching the concepts under the subject Disciplines and Ideas in Social Sciences (DISS) for senior high school (SH). The material is inclined with the lessons based on the Most Essential Learning Competencies (MELCs) and was patterned with the sequence of the Alternative Delivery Modality (ADM) of the Department of Education. The following specific parts are provided in every lesson: (1) looking ahead; (2) essential questions; (3) concepts unlocked; (4) concept building; and (5) mind hop.

The Research and Development (R & D) method, also known as research-based development methodology, was employed. The following steps were followed: 1) preliminary preparation; 2) detailed writing specifications; 3) designing and development of the e-learning resource; and (4) content and technical validations of the material to panel of experts; 6) revision of the material based from evaluators' comments and suggestions; and 7) final production of the e-learning resource.

This study used two data gathering instruments: 1) a survey questionnaire to assess the need-to-develop for a mobile application for the different concepts or competencies under Disciplines and Ideas in Social Sciences; and 2) a content validation rating scale to assess the content validity of the material together with an instrument for its technical qualities.

The content and technical validity of the e-learning resource were determined using the weighted mean. Results revealed that the criteria under the content validation are all *highly satisfactory*. Also, based on the results, the components under the technical aspects of the material are all *highly valid.*

Similar research is recommended to continue the development of an e-learning resource for the subject Disciplines and Ideas in Social Sciences and other major subjects offered in the strand Humanities and Social Sciences (HUMSS) that are ICT-based and thus goes with the present trend making it timely and relevant to the learners' needs.

Keywords: Instructional Material, Development, Innovation, Information Communication Technology (ICT) Integration, Research and Development, Original Research

1. INTRODUCTION

While people are still struggling with the devastating effects of the COVID-19, the Department of Education (DepEd) pursued a new standard in delivering quality education that is relevant to all the learners nationwide. Despite all odds, the Department of Education is committed in maintaining educational continuity in the face of the global pandemic's ongoing problems. No matter what, education must continue to provide hope and stability, contribute to the normalization of activities in the country, support learners' development, and restore normalcy to their lives. As a current trend, learners' health and safety, as well as

that of school personnel such as teachers and other frontline personnel, are at risk, particularly in the delivery of instruction, where modules are the major option, and the Department of Education looks into all options for making teachers' instructional delivery safer and more convenient (Department of Education Order No. 012, s. 2020). Thus, a need to dwell into the aid of technology is most seen by experts such that the synchronous mode of teaching was given consideration and other flexible learning modalities. Therefore, a thorough research is still needed to come up with the best alternatives especially in the delivery of lessons in the new normal.

The Department of Education (DepEd) has failed to provide sufficient learning modules for a number of subjects, according to the Alliance of Concerned Teachers (ACT), including Music, Arts, Physical Education, and Health for Grade 1, Araling Panlipunan for Grades 2-7 and 9, Science for Grades 5-6, Filipino for Grades 6-8, and Math for Grades 6-8 and 10.

For the Senior High School (SHS) Program, there is also a scarcity of learning modules for Grade 11 in numerous strands, including General Academics (GAS), Accountancy and Business Management (ABM), and Technical and Vocational Livelihood (TVL), particularly in Shielded Metal Arc Welding (SMAW), and most especially the focus of this study, Humanities and Social Sciences (HUMSS) (Philstar, 2019). Social sciences subjects under that are the following; Introduction to World Religions and Beliefs System, Philippine Politics and Governance, and Disciplines and Ideas in Social Sciences (DepEd Memorandum No. 89, 2020). These subjects are the most crucial since they provide foundation to the strand for they are offered in the grade 11.

In response to the emergency, DepEd developed the Basic Education Learning Continuity Plan (BE-LCP) to ensure that learning opportunities are provided to the learners in a safe manner, through different learning delivery. In line with this, the Department, through its Regional and Schools Division Offices undertake the urgent and necessary development, production, and provision of learning resources (DepEd Order No. 018, s. 2020). This situation calls for an “adopt quickly” response to the new normal in teaching and learning amidst the pandemic (Tanhueco- Tumapon, 2020).

The researcher felt that developing an instructional tool for Disciplines and Ideas in Social Sciences (DISS) would lessen the current problem of the education in the new normal. The DISS is considered as a foundational subject in the HUMSS strand since it holds all competencies that are necessary for introducing the basic concepts and theories in the said strand. By giving the learners an effective instructional material that could provide understanding of the basic concepts of the subject, they may be able to meet the competencies required for the subject.

Although, in the beginning of the School Year 2020-2021, the Department of Education began amending the Basic Education-Learning Continuity Plan (BE-LCP), delivering the lessons to the learners still demands innovation from the teachers. This resorted to the employment of self-learning printed modules, radio-based instructions, television-based instructions, and online classes. But not a single modality is capable of providing effective education to the learners. According to Dangle and Sumaoang (2020), the majority of students are having difficulty with this new learning style. Ninety percent of those who took part struggled to finish their courses. In a week, half of them will not be able to complete all of their modules. They typically receive at least eight modules across all subjects, each with 3-5 tasks. Therefore, the researcher would like to assess what concept/s in the Disciplines and Ideas in Social Sciences is/are in need for a new instructional tool that is suitable to the current *status quo*.

With the conviction that an e-learning resource for the subject DISS would be a paramount solution to the problem of the aforementioned subject in the new normal with regards to the lack of ICT-based learning materials, the said e-learning material was proposed for its development and validation along a specific discipline under the HUMMS strand.

UNDER PEER REVIEW

2. MATERIAL AND METHODS / EXPERIMENTAL DETAILS / METHODOLOGY

This study is a Descriptive Research which followed Research and Development approach (R and D). The R and D approach entails systematic creative labor aimed at increasing knowledge, including knowledge that may be used to develop new methodologies and applications, notably in teaching and learning (OECD, 2013). Thus, this study is primarily intended to develop an e-learning resource for Disciplines and Ideas in Social Sciences under Humanities and Social Sciences.

This study has undergone three stages– the planning stage, stage of material development and validation. The planning stage comprises two specific stages, namely: preliminary preparation and detailed writing specification. The development stage involves the creation an e-learning resource specifically a mobile app. The validation stage as the final phase of the study focuses on the validation, revision and finalization of the developed mobile application.

1. Planning Stage

1.1. Preliminary Preparation. Before the development of the mobile application, the researcher conducted a needs-assessment survey to the concepts or competencies that need e-learning resource.

The researcher will conduct a preliminary survey checklist on the extent of the need for the development of Mobile Application for teachers in the Schools Division of Ilocos Norte. All Senior High School teachers who are teaching Disciplines and Ideas in Social Sciences (DISS) under the HUMMS strand in all divisions of the province will be included as respondents of the preliminary survey.

In addition, the results of the preliminary survey will serve as the basis for the development of mobile application.

1.2. Detailed Writing Specification. Before the development of the mobile application, the researcher considered setting the guidelines for the format, the technical details, the layout, and the manner of presentation of the lessons with the aid of the expert-validators.

2. Development Stage

Designing and Development of the Mobile Application. After all the important information had gathered through the needs-assessment survey of all teachers handling major subjects under the HUMMS strand, the researcher started on the development of the mobile application.

The mobile application covered the following parts:

a. Preliminary User Interface (Name of the Mobile App, contents and credits)

b. Learning Contents Interface (MELCS-based)

b.1 Chapter Introduction [Looking Ahead (what the chapter is all about), Concepts Unlocked (definition of important concepts), Nuggets for the Brain (trivia).

b.2 Learning Outcomes (targets), Concept Building: What You Need to Know (information that is infographic and pictographic), Mind Hop (assessment tasks) and References (sources of information reflected in various lessons).

3. Validation Stage

The panel of experts evaluated the content of the mobile application in terms of its content with the following criteria: objectives, activities, instructional characteristics, assessment characteristics. Alongside, the technical quality in terms of functionality, reliability, usability, portability, maintainability and efficiency adapted from Chua and Dyson

UNDER PEER REVIEW

(2004) was used. This is a 23-item validation scale to used by the evaluators in determining the validity of the developed mobile application.

3. RESULTS AND DISCUSSION

Concepts in Disciplines and Ideas in Social Science that Need E-learning Resource

This section discusses the level of necessity in developing a suitable and reliable e-learning resource to the different concepts in the SHS subject Disciplines and Ideas in Social Sciences (DISS) offered under the Humanities and Social Sciences (HUMMS) strand.

It can be recalled that there exists a shortage of instructional and supplemental materials in different strands, specifically in terms of ICT-based materials. Reportedly, one of these subjects is Disciplines and Ideas in Social Sciences (DISS). With this, the researcher, being one of those who are teaching the said subject felt that conducting a needs-assessment assessment survey would be the cornerstone for the development of a timely and reliable e-learning resource in a form of mobile application. The results have shown a significant finding that majority, if not all, of the lessons in DISS need ICT-based supplemental resource materials.

Extent of Necessity for the E-Learning Resource in Disciplines and Ideas in Social Sciences for the First Quarter

Table 1 shows the extent of necessity among the different competencies for the first semester under the subject Disciplines and Ideas in Social Sciences (DISS) as identified by the teachers from the different Schools Division of Ilocos Norte.

Based on the table, the composite mean rating of 3.46 with a descriptive interpretation *very much necessity* clearly indicates that all the concepts in Disciplines and Ideas in Social Sciences need an e-learning resource. As to the results, it is observed that the respondents gave equal importance to all the competencies in the subject.

Specifically, competency #1 differentiate the nature and functions of Social Science disciplines with the natural sciences and humanities, obtained 3.36 as its mean score which can be interpreted as *much needed*. It is the lowest recorded mean among all the competencies based on the result. This is due to the fact that the lesson is not that complicated and the concepts under this competency may be easily found in other learning resources.

On the other hand, the following competencies: (2) explain the major events and its contribution that led to the emergence of the social science disciplines obtained a mean score of 3.48; (3) analyze the basic concepts and principles of the major social science theories: a. Structural-functionalism, b. Marxism, and c. Symbolic Interactionism on the ither hand obtained a mean score of 3.44; (4) apply the major social science theories and its importance in examining socio-cultural, economic, and political conditions obtained a mean score of 3.48; and (5) analyze and apply the basic concepts and principles of the major social science ideas: a. Psychoanalysis, b. Rational Choice, c. Institutionalism, d. Feminist Theory, e. Hermeneutical Phenomenology, and f. Human-Environment Systems obtained a mean score of 3.52. Overall, all of the aforementioned competencies have garnered high mean scores which is interpreted as *very much needed*.

Table 1. Mean rating on the level of necessity for the development of e-learning resource for the competencies under DISS in the first quarter as assessed by the teachers from the different Schools Division of Ilocos Norte.

MELCs-based competencies	Mean	Descriptive

UNDER PEER REVIEW

			Interpretation
1.	Differentiate the nature and functions of Social Science disciplines with the natural sciences and humanities	3.36	MN
2.	Explain the major events and its contribution that led to the emergence of the social science disciplines	3.48	VMN
3.	Analyze the basic concepts and principles of the major social science theories: a. Structural-functionalism b. Marxism c. Symbolic Interactionism	3.44	VMN
4.	Apply the major social science theories and its importance in examining socio-cultural, economic, and political conditions. a. Structural-functionalism b. Marxism c. Symbolic Interactionism	3.48	VMN
5.	Analyze and apply the basic concepts and principles of the major social science ideas: a. Psychoanalysis b. Rational Choice c. Institutionalism d. Feminist Theory e. Hermeneutical Phenomenology f. Human-Environment Systems	3.52	VMN
Overall Mean		**3.46**	**VMN**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Very Much Needed (VMN)
	2.61-3.40	Much Needed (MN)
	1.81-2.60	Slightly Needed (SN)
	1.00-1.80	Not Needed (NN)

The result proves the existence of scarcity of materials in the Department of Education, particularly on e-learning resources. It can be recalled that this initiation in the development of a timely supplementary material stemmed from the combined reports that there is a must for teachers to fill-in the insufficiency of teaching-learning materials and the "adopt quickly" educational movement amidst the pandemic (Tanhueco- Tumapon, 2020). Thus, it became evident that the development of an e-learning resource for the different concepts of Disciplines and Ideas in Social Sciences may greatly contribute to ease the assumed problem in the Senior High School program particularly under the HUMSS strand.

When teachers teaching DISS were asked why an e-learning resource must be developed, some of their comments were:

> "There are many interactive materials in AP but mostly are just stand-alone videos and print materials.
>
> *-Respondent 36*

> I hope that this survey will help us HUMSS teachers to meet the competencies especially that this subject lacks ICT-based resources.
>
> *Respondent 42*

Based on their comments, it became apparent that the significance of this study is indispensable in the teaching and learning scenarios of today's generation. This study accepts the role of technology as a constant provider of information and the most convenient

UNDER PEER REVIEW

way of making connections with the available learning resources on the internet. This way, the millennial students and onwards will be able to relate, learn and utilize the concepts of their subject in a way that they are interested with. This always go down on the concept about connectivism which states that learning becomes the ability to tap into significant flows of information, and to follow those flows that are significant. In other words, the more mediums that are being used by the learner, the more that he will be engaged in the learning process.

Also, it is drawn from that in the development of an e-learning research, the concepts must be pattered from the prevailing list of competencies. Some of the comments from the respondents were:

> It is better to include all the competencies in the e-learning package.
>
> *-Respondent 44*

> We need also to see the alignment of competencies to the lessons, assessment, and activities that we are providing to ensure better result of learning.
>
> *-Respondent 62*

Thus, the need of a new e-learning material should not only dwell to its plain and simple creation, but it should also be inclined with the current curriculum to cater the demands of the new normal education. The researcher is fully convinced since he is also a current public-school teacher that the contents of the e-learning resource must be based on the Most Essential Competencies (MELCs) and that the concepts are relevant to the needs of the learners.

Therefore, there exists a need for the development of an e-learning resource that is able to give a virtually extensive learning experience to the learners that is dynamic and interactive for in line with the competencies for the SHS first quarter under the Disciplines and Ideas in Social Sciences.

Extent of Necessity for the E-Learning Resource in Disciplines and Ideas in Social Sciences for the Second Quarter

Table 2 presents the mean scores on the extent of necessity for the competencies in the second quarter under the subject, Disciplines and Ideas in Social Sciences (DISS), reflective of the responses of the teachers in the different Schools Division in Ilocos Norte. Based on the table, it is evident that the teachers of this subject are *very much in need* of an e-learning resource, as indicated by the composite mean of 3.56, for the competencies in the second quarter.

Notably, competency #1 examine the key concepts and ideas of Filipino thinkers in the Social Sciences rooted in Filipino language/s and experiences: a. 19th Century (Isabelo delos Reyes, Jose Rizal, others), and b. 20th - 21st Century (Sikolohiyang Pilipino, Pantayong Pananaw, others), garnered 3.55 as its mean rating which can be interpreted as *very much needed*. It can be recalled that most learners in this generation are no longer aware of the contributions of the national heroes of our country. It follows that at the high school level, the learning objectives of history are: 1) to encourage students to think critically and analytically in utilizing knowledge about the past to understand present and future lives; 2) to understand that history is part of everyday life; and 3) to develop intellectual abilities and skills to understand the process of change and community sustainability (Pusat Kurikulum, 2002).

Thus, this supports the result of the extent of need in making an e-learning resource for the concepts under this particular competency as it would aid in the mastery of concepts thereby teachers knew its importance in building the foundation of the learners in venturing the subjects under Humanities and Social Sciences (HUMSS).

Further, competency #2 evaluate the roles and significance of Filipinos' indigenous social ideas to national development garnered 3.56 as its mean score which can also be interpreted as *very much needed*. It implies that there are limited materials for this competency. This may be attributed to the lack of technological advancement and struggles that the Department of Education is facing even before the pandemic.

It is observed that teaching and learning of social studies/social sciences has largely relied on traditional methods with little incorporation of technological innovations and that Social Sciences/Social Studies teachers tend to rely more on teacher-centric instructional strategies with little variation (Lenyatso, 2013). Thus, it is observed that the necessity for making an e-learning resource in this competency is the hope of bringing immersive experiences to the learners with the different indigenous social ideas through ICT integration.

Lastly, competency # 3 analyze the practical use of Social Sciences in addressing social concerns and phenomenon garnered 3.57 as its mean score which is interpreted as *very much needed*.

Table 2. Mean rating on the level of necessity for the development of e-learning resource for the competencies under DISS in the second quarter as assessed by the teachers from the different Schools Division.

MELCs-based competencies	**Mean**	**Descriptive Interpretation**
1. Examine the key concepts and ideas of Filipino thinkers in the Social Sciences rooted in Filipino language/s and experiences: a. 19th Century (Isabelo delos Reyes, Jose Rizal, others) b. 20th - 21st Century (Sikolohiyang Pilipino, Pantayong Pananaw, others)	3.55	VMN
2. Evaluate the roles and significance of Filipinos' indigenous social ideas to national development	3.56	VMN
3. Analyze the practical use of Social Sciences in addressing social concerns and phenomenon	3.57	VMN
Overall Mean	**3.56**	**VMN**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Very Much Needed (VMN)
	2.61-3.40	Much Needed (MN)
	1.81-2.60	Slightly Needed (SN)
	1.00-1.80	Not Needed (NN)

Based on the results, it is evident that the competencies for the second quarter under the subject Disciplines and Ideas in Social Sciences are also *very much in need* of an e-learning resource focusing on the concepts thereto. It is observed that the concepts in these competencies are more of a type that should be coupled with photo and video clips integration so that the learners would have greater appreciation about the topics and thus making the learning process more fun and interactive.

In this regard, some of the comments of the validators were:

UNDER PEER REVIEW

> This is timely because e-learning helps students and teachers develop advanced skills and make positive connections with knowledge, experience, and identity.
>
> *-Respondent 17*

> We need to improve our resources in order to teach our HUMSS students the best way possible.
>
> *-Respondent 22*

> It is high time to produce ready-made resource materials in teaching Disciplines and Ideas in Social Sciences to at least ease the burden of teachers teaching the subject especially so that not all teachers teaching DISS are Social Studies majors.
>
> *-Respondent 30*

With these comments, it is evident that the scarcity of material for this subject, Disciplines and Ideas in Social Sciences (DISS), extends to the competencies to the second quarter. It is implied based on the comments of the respondents that this subject is one of the most important subjects because it serves as the foundation of all the learnings under the strand, Humanities and Social Sciences (HUMSS).

This is being supported with one of the comments of the respondents:

> Disciplines and Ideas in Social Sciences (DISS) requires higher order thinking skills and critical and reflective thinking, so I must say that it is one of the hardest specialization subjects for Humanities and Social Sciences (HUMSS) learners.
>
> *-Respondent 44*

In addition, the integration of Information Communication Technology (ICT) in the teaching-learning process for this generation is required in the social sciences and social studies subjects because it has numerous benefits such as being able to break down classroom physical limitations and expanding students' experiences, development of students' inquiry and analytical skills, and broadening students' exposure to visual technologies (Vanfossen, 2012). It is very clear that there exists a need for the development of an e-learning resource for the competencies in the second quarter under Disciplines and Ideas in Social Sciences.

Content Validation of the E-Learning Resource
for the Disciplines and Ideas in Social Sciences (DISS)

This part presents the results of the content validation of the e-learning resource made by the expert validators from different Schools Division with other experts from the Commission on Higher Education (CHED). Specifically, three (3) Education Supervisors for Araling Panlipunan, three (3) Master Teachers, one (1) Higher Educational Institution Instructor with ten-year experience in teaching Social Sciences/Studies, and (1) Information Communication Technology expert.

The content of the e-learning resource was validated in accordance with its objectives, contents, activities, and assessment techniques.

The specific objectives for the different competencies of the subject are provided in the learning outcomes of the e-learning resource. Aside from that, the material also has separate sections for the looking ahead which provides the introduction of the lesson or

concept, the essential questions that guide the learner in venturing the lesson, and the concept unlocked that enumerates the important terms and their definitions. These parts form part to the general objectives of each competency in the e-learning resource.

Table 3. Results of the content validation on the objectives of the e-learning resource.

Components	Mean	Descriptive Interpretation
1. Specific	4.00	HS
2. Measurable	4.00	HS
3. Attainable	4.00	HS
4. Realistic	4.00	HS
5. Time-bound	4.00	HS
6. Clearly stated	4.00	HS
Overall Mean	**3.56**	**HS**

Legend:	Range of Means	Descriptive Interpretation
	3.41-4.00	Highly Satisfactory (HS)
	2.61-3.40	Moderately Satisfactory (MS)
	1.81-2.60	Slightly Needs Improvement (SNI)
	1.00-1.80	Needs Improvement (NI)

It is apparent in the above table that the objectives of the different competencies in the e-learning resource are *highly satisfactory*, as indicated by an obtained mean rating of 4.00.

It means that the objectives of all the competencies in the e-learning resource are specific, measurable, attainable, realistic, time-bound, and clearly stated. They are specific because they only cater to the specific concepts that are needed in the lesson. They are also measurable because the learning outcomes can be observed and clearly provided. Further, they are also attainable as the learning outcomes are already simplified in the e-learning resource. Furthermore, the objectives are realistic because the learning outcomes are useful in real-life scenarios and that the learners can attain these objectives. Also, they are time-bound because they can be achieved in the given time. Lastly, the objectives are clearly stated which means they are not vague and that the learners can easily understand them.

It is observed that the validators agreed with how the objectives are crafted and presented. The researcher would like to quote their comment about the objectives of the lessons:

> The objectives, contents, activities, and assessments of the e-learning resource are suited to the level of the students.
>
> -*Validator*

With this, the objectives of the different competencies in the e-learning resource follow the principles of setting goals enshrined in the Goal-Setting Theory by Edwin Locke which states that objectives should be specific, measurable, attainable/achievable, realistic, and time-bound (SMART) with a high satisfactory level from the validators of the material.

The contents of the e-learning resource were also validated if they are clear and easy to understand, jibe with the objectives and activities presented, and utilize information that are up to date. In the e-learning resource, the contents of the different competencies are provided in the concept building section. The concept building presents the lessons through text, infographics, pictographic presentations, videos, timeline, and the likes depending on the nature of the subject matter.

Table 4. Result of the content validation on the contents of the e-learning resource.

UNDER PEER REVIEW

Components	Mean	Descriptive Interpretation
1. Clear and easy to understand	4.00	HS
2. Jibe with the objectives and activities presented	4.00	HS
3. Utilize information that are up-to-date	3.88	HS
Overall Mean	**3.96**	**HS**

Legend:	Range of Means	Descriptive Interpretation
	3.41-4.00	Highly Satisfactory (HS)
	2.61-3.40	Moderately Satisfactory (MS)
	1.81-2.60	Slightly Needs Improvement (SNI)
	1.00-1.80	Needs Improvement (NI)

Based on the preceding table, the contents of the e-learning resource are *highly satisfactory* as indicated by the obtained mean rating of 3.96. Thus, the contents are parallel with their objectives and activities. Since this would cater the Grade 11 students of the Senior High School Program, the contents were laid down in a clear manner which is comprehensible for their level.

The validators are positive that the activities presented in each competency jibe well with the targeted objectives. This means that this would ensure a higher level of mastery of the lessons that must be acquired by the learners. Content of any instructional and learning material must always be always novel and relevant. Thus, the researcher utilized information that are up to date to meet the needs, interest, and demands of a twenty-first century learner.

Since content validity is a prerequisite to other tests of validity, it should receive the highest priority during instrument development, selection and usage (Zamanzadeh, 2015).

The activities of the e-learning resource were also validated if they represent real life activities, helpful in making the lessons clearer, relevant to the prescribed curriculum and objectives of the subject, provide up to date information, varied and arranged in logical manner, present varied and provoking activities, have enough activities that could develop needed skills and critical thinking ability, provide opportunities for the students to be actively involved, include activities which are interesting and challenging, have clear and logically arranged instructions/directions/steps, develop desired values, and use instructional media that clearly develop those concepts.

In the e-learning resource, the activities of the different competencies are presented in the mind hop section. The activities vary depending on the nature of the lessons and in order to make the material more engaging, fun, and mind provoking.

Table 5. Result of the content validation on the activities of the e-learning resource.

Components	Mean	Descriptive Interpretation
1. Represent real life activities	3.88	HS
2. Helpful in making the lessons clearer	3.75	HS
3. Develop topics/ concepts relevant to the prescribed curriculum and objectives of the subject	3.88	HS
4. Provide up to date information	3.88	HS
5. Varied and arranged in logical sequence	3.88	HS
6. Present varied and provoking activities	3.75	HS
7. Activities that could develop needed skills and critical thinking ability	3.75	HS
8. Provide opportunities for the students to be actively involved	3.75	HS
9. Include activities which are interesting and challenging	3.88	HS
10. Have clear and logically arranged	3.75	HS

UNDER PEER REVIEW

instruction/direction/steps		
11. Develop desired values	3.88	HS
12. Use instructional media that clearly develop the concepts	3.75	HS
Overall Mean	**3.82**	**HS**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Highly Satisfactory (HS)
	2.61-3.40	Moderately Satisfactory (MS)
	1.81-2.60	Slightly Needs Improvement (SNI)
	1.00-1.80	Needs Improvement (NI)

It can be gleaned in the above table that the activities of the e-learning resource are highly satisfactory, as indicated by the mean rating 3.82.

This result is expected in every type of e-learning resource since their very nature is to provide dynamic and innovative way of learning the concepts of the subject. This is being supported by the comment of one of the validators:

> The app is highly recommended as supplementary material that can be used by learners. Having such innovation in the field of Social Studies is a great endeavor of our researcher/writer/developer in improving quality education in the field of Social Studies.
>
> *-Validator*

Indeed, this interactive experience is evident in the different activities of the e-learning resource. Some activities demand the learners to swipe, click, drag and the like to get the correct answer, still some activities demand the learners to upload or send photos to complete the tasks, and other activities would ask the learners to construct a sentence or a paragraph to finish the tasks. This feature of the e-learning resource was complemented by one of the validators by saying that:

> The material is very promising and an effective tool to enhance the delivery of instruction and can develop critical thinking skills among learners. The activities that are embedded in the material are very interactive.
>
> *-Validator*

Therefore, the activities of the e-learning resource are highly satisfactory as they meet all the criteria in the validation tool and the expectations of the validators.

Lastly, the assessment techniques of the material were validated as to their capacity to match with the objectives of the lesson, measure mastery of the lesson, and develop critical thinking. The e-learning resource is a complete package that provides both formative and summative assessment for the learners. Formative assessments are inclusive in the activities under the mind hop section while there is a separate section for the summative assessment.

Table 6. Results of the content validation on the assessment techniques of the e-learning resource.

Components	**Mean**	**Descriptive Interpretation**
1. Match with the objective of the lesson	3.88	HS
2. Measure mastery of the lesson	3.88	HS

3. Develop critical thinking	3.88	HS
Overall Mean	**3.88**	**HS**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Highly Satisfactory (HS)
	2.61-3.40	Moderately Satisfactory (MS)
	1.81-2.60	Slightly Needs Improvement (SNI)
	1.00-1.80	Needs Improvement (NI)

Table 6 expresses a high unanimous validation result from the experts as it can be gleaned that the three areas in the evaluative items in the instructional guide were each rated 3.88 with an average mean of 3.88 also or *highly satisfactory*.

It can be deduced from these numbers that the items for assessment purposes matched with the objectives of the lesson. Assessment should reveal how well students have learned and what we want them to learn while instruction ensures that they learn it. For this to occur, assessment, learning objectives and instructional strategies need to be closely aligned so that they reinforce one another (Everly Center Teaching Excellence and Educational Innovation, 2022).

On the other hand, the researcher infused in the assessment techniques some items that develop critical thinking of students since promoting learners' higher order thinking skills (HOTS) are crucial to their overall cognitive development.

Technical Validation of the E-Learning Resource for the Disciplines and Ideas in Social Sciences (DISS)

This part presents the results of the technical validation of the e-learning resource for the Disciplines and Ideas in Social Sciences (DISS) conducted by the same validators. The technical aspects of the material were validated through the functionality, reliability, usability, portability, maintainability, efficiency of the e-learning resource.

The functionality of the material covers its sustainability (can the software perform tasks required?), accurateness (are the learning competencies in line with the assessment tasks?), interoperability (can the system interact with another system?), and security (does the software prevent unauthorized access?).

Table 7. Result of the technical validation on the functionality of the e-learning resource.

Components	**Mean**	**D I**
1. Suitability	3.88	HV
2. Accurateness	4.00	HV
3. Interoperability	3.75	HV
4. Security	3.75	HV
Overall Mean	**3.85**	**HV**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Highly Valid (HV)
	2.61-3.40	Moderately Valid (MV)
	1.81-2.60	Slightly Valid (SV)
	1.00-1.80	Needs Improvement (NI)

It is shown in the preceding table that the functionality of the e-learning resource is *highly valid*, as indicated by the mean rating of 3.85.

This means that the material performs all the required tasks, the learning competencies are in line with the assessment tasks, and it can interact with other systems such as Android and Windows apart from iOS.

The researcher was not able make the material compatible with iOS due to restrictions, permissions and financial considerations needed to fuse it with the material. However, the

UNDER PEER REVIEW

material may freely run in all other operating systems (OS) regardless of their brands and models.

The app is also secured as it prevents unauthorized access. The material was prudently designed by the researcher as a combination of online and offline modalities making it flexible and accessible to the learners. The learner does not need to log in his account to access the application but for other activities where he is asked to submit a file or picture, the learner must use his google account.

On the other hand, the reliability of the material includes the fault tolerance (is the software capable of handling errors?), recoverability (can the software resume working and restore lost data after failure?), originality (are icons unique, novel and originally made?), authority (is there a reference section provided for each chapter in the system?).

Table 8. Results of the technical validation on the reliability of the e-learning resource.

Components	**Mean**	**Descriptive Interpretation**
1. Fault tolerance	3.75	HV
2. Recoverability	3.75	HV
3. Originality	3.88	HV
4. Authority	3.63	HV
Overall Mean	**3.75**	**HV**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Highly Valid (HV)
	2.61-3.40	Moderately Valid (MV)
	1.81-2.60	Slightly Valid (SV)
	1.00-1.80	Needs Improvement (NI)

Reflected on the table above is the technical reliability facets of the e-learning resource wherein the consensus mean from the validators were rated as highly satisfactory, specifically 3.75.

According to ANSI (1999), software reliability is defined as the probability failure-free software operation for a specified period of time in a specified environment. While research shows that software reliability is hard to achieve because of the complexity of software which tends to be high, the researcher made efforts to maximize the e-learning resource' reliability. Primarily, the researcher focused on aspects such as fault tolerance, recoverability (e.g. loss of internet connection), and icons were unique, novel and originally made.

It can also be noted that one of the sub characteristics which is authority, tackles on the reference section provided for in each chapter in the system needs a slight improvement as it gained the lowest mean score of 3.63 among others.

In like manner, the usability of the e-learning resource was also validated through its understandability (does the user comprehend how to use the system easily?), learnability (can the user learn to use the system easily?), operability (can the user use the system without much effort and guidance?), and attractiveness (does the interface in various lessons look good?).

Table 9. Results of the technical validation on the usability of the e-learning resource.

Components	**Mean**	**Descriptive Interpretation**
1. Understandability	3.63	HV
2. Learnability	3.88	HV

UNDER PEER REVIEW

3.	Operability	3.75	HV
4.	Attractiveness	3.88	HV
Overall Mean		**3.79**	**HV**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Highly Valid (HV)
	2.61-3.40	Moderately Valid (MV)
	1.81-2.60	Slightly Valid (SV)
	1.00-1.80	Needs Improvement (NI)

Considering the average mean above which is 3.79 or *highly satisfactory,* it meets one of the most important criteria of a user-friendly application in terms of usability. Based on the findings of the validators, the mobile app system is comprehensible and can be learned easily. While as to operability, senior high school students can use the application without much effort and guidance already. Any instruction and learning material must be appealing to learners to attract their attention. Thus, the e-learning resource in a form of mobile app was programmed with a simple yet with an attractive interface. With this finding, one of the validators commented:

> This e-learning resource is perfect for teaching as well as entertaining the learners.
>
> -*Validator*

There are still expected room for improvements in the technical advancement of the application as emphasized by another validator:

> What about teachers using iOS mobile devices? It should not be limited to Android phones only.
>
> -*Validator*

By engaging a few key usability heuristics during an app developer's design and development stages, he can ensure that the software is efficient, effective, engaging, error tolerant, and easy to learn (Koskie, 2022).

Also, the portability of the material was validated through its adaptability (can the software be moved to other environments?), dependability (can the software be used even if it is offline once downloaded?), installability (can the software be installed easily in the mobile device?), and replaceability (can the software easily replace other softwares?).

UNDER PEER REVIEW

Table 10. Results of the technical validation on the portability of the e-learning resource.

Components	**Mean**	**Descriptive Intrepretation**
1. Adaptability	3.88	HV
2. Dependability	3.75	HV

3.	Installability	3.88	HV
4.	Replaceability	3.75	HV
Overall Mean		**3.79**	**HV**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Highly Valid (HV)
	2.61-3.40	Moderately Valid (MV)
	1.81-2.60	Slightly Valid (SV)
	1.00-1.80	Needs Improvement (NI)

Based on the results presented in the above table, it is evident that the e-learning resource has gained 3.79 as its mean rating portability, which can be interpreted as *highly valid.*

It is very clear that the material can be moved from one environment to another since it does not need internet connection to access the discussion parts, as well as its activities and assessments. The strategic design of the e-learning resource was rooted from the general knowledge that not all learners have stable internet connection.

It was designed that the material is a combination of offline and online modalities. Most of the enrichment activities are in online mode because of the videos that are linked on the YouTube while the important parts of the material are all offline.

The e-learning resource is very convenient based on the results of the evaluation as it only takes few clicks to install the app in the learner's mobile device. This feature minimizes the stress of the mobile app's users. The researcher, being a fan of gadgets and technologies, knew how important convenience in installation is. Hence, this e-learning resource in a form of mobile app.

Lastly, the e-learning resource cannot replace other software without the permission of the latter. However, it can replace itself by just uninstalling and installing it from the mobile device.

Further, the maintainability of the material was validated through its analyzability (can faults be easily diagnosed?), changeability (can the software be easily modified?), stability (can the software continue functioning if updates or changes are made?), and testability (can the software be tested easily?).

Table 11. Results of the technical validation on the maintainability of the e-learning resource.

Components		**Mean**	**Descriptive Interpretation**
1.	Analyzability	3.88	HV
2.	Changeability	3.75	HV
3.	Stability	3.63	HV
4.	Testability	3.88	HV
Overall Mean		**3.79**	**HV**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Highly Valid (HV)
	2.61-3.40	Moderately Valid (MV)
	1.81-2.60	Slightly Valid (SV)
	1.00-1.80	Needs Improvement (NI)

Based on the results presented in the above table, it is clear that the e-learning resource has gained 3.79 mean rating with regard to maintainability which can be interpreted as *highly valid.*

Faults can be easily diagnosed in the e-learning resource because the material will not run when it detects error already. The material will stop, or it will not be installed. However, the software can also be easily changed by uninstalling and installing it in the mobile device.

UNDER PEER REVIEW

The e-learning resource does not have any web page or source. This means to say that it does not allow any updates or changes after its installation in the mobile device. The e-learning resource will run smoothly as it only consumes minimal storage and memory. The researcher felt that most of the learners cannot afford high quality of devices thereby choosing this kind of software that benefits all.

Furthermore, the efficiency of the material was validated through its time behavior (does the system respond quickly?), resource utilization (does the system utilize resources efficiently?), and teachability (does the system as a supplementary digital-based instructional material promote active learning?).

Table 12. Results of the technical validation on the maintainability of the e-learning resource.

Components	**Mean**	**Descriptive Interpretation**
1. Time behavior	3.88	HV
2. Resource utilization	3.88	HV
3. Teachability	3.88	HV
Overall Mean	**3.88**	**HV**

Legend:	**Range of Means**	**Descriptive Interpretation**
	3.41-4.00	Highly Valid (HV)
	2.61-3.40	Moderately Valid (MV)
	1.81-2.60	Slightly Valid (SV)
	1.00-1.80	Needs Improvement (NI)

The table above shows the efficiency level of the e-learning resource with a mean rating of 3.88 or *highly satisfactory*. The sub characteristics such as time behavior, resource utilization, and teachability were rated the same with an average of 3.88 each. This implies that the system responds quickly while being operated. This feature of the software application will make its user, specifically the learners, to have their task be done continuously and without distractions from lagging.

In light of resource utilization, the researcher collaborated with IT experts to see to it that the resource will be utilized efficiently, though this will still be observed when many users will be using the application at the same time. The e-learning resource was designed as a supplementary digital-based resource material for DISS and its nature is more of an independent learning resource.

With the validation made by experts, the e-learning resource in a form of mobile app is valid in terms of its content and technical qualities.

4. CONCLUSION

Based on the findings mentioned above, it can be concluded that there exists a need for the development of an e-learning resource for the concepts under the Most Essential Competencies (MELCs) in the subject Disciplines and Ideas in Social Sciences (DISS) that can provide active learning experience on the part of the learners specifically in the mastery of the competencies all throughout the semester. In addition, the integration of Information Communication Technology (ICT) in the teaching-learning process for this generation is required in the social sciences and social studies subjects because it has numerous benefits such as being able to break down classroom physical limitations and expanding students' experiences, development of students' inquiry and analytical skills, and broadening students' exposure to visual technologies.

Further, the content of the developed e-learning resource is found to be highly satisfactory in all criteria. The objectives of all the competencies in the e-learning resource are specific, measurable, attainable, realistic, time-bound, and clearly stated. The activities

UNDER PEER REVIEW

of the e-learning resource are high satisfactory as they meet all the criteria in the validation tool and the expectations of the validators. Lastly, the researcher infused in the assessment techniques some items that develop critical thinking of students since promoting learners' higher order thinking skills (HOTS) are crucial to their overall cognitive development.

Lastly, the technical aspects of the e-learning resource are all highly valid. This means that the material performs all the required tasks, the learning competencies are in line with the assessment tasks, and it can interact with other system aside from iOS. Also, it can be drawn that the material is highly reliable since it is capable of handling errors, it records data, majority of the icons are originally made, and a reference card (bibliography) is included. It is also evident that the material is user-friendly. It is very clear that the material can be move from one environment to another since it does not need internet connection to access the discussion parts, as well as its activities and assessments. Faults can be easily diagnosed and is easy to troubleshoot by installing and uninstalling the app. Lastly, the system responds quickly while being operated.

UNDER PEER REVIEW

CONSENT

NONE

ETHICAL APPROVAL (WHERE EVER APPLICABLE)

NONE

REFERENCES

Acquah-Doughan, M. (2015). Availability and utilization of information and communication technol-ogy facilities in teaching social studies in public senior high schools in Sekondi Takoradi Metropo-lis. Unpublished Thesis submitted to the Univer-sity of Cape Coast. Retrieved on December 29, 2021 from https://ir.ucc.edu.gh/xmlui/bitstream/handle/123456789/2925/ACQUAH-DOUGHAN%202015.pdf?sequence=1&isAllowed=y

Adzharuddin, N.A., & Ling, L. (2013). Learning Management System (LMS) among University Students: Does It Work?. IJEEEE 2013 Vol.3(3): 248-252 ISSN: 2010-3654. Retrieved on December 30, 2021 from http://www.ijeeee.org/index.php?m=content&c=index&a=show&catid=37&id=543

Aithal, P. S. and Aithal, Shubhrajyotsna, (2016). Impact of On-Line Education on Higher Education System. International Journal of Engineering Research and Modern Education (IJERME), Vol. 1(1), pp. 225-235, 2016 ISSN: 2455–4200, DOI/10.5281/zenodo.161113., Retrieved on December 30, 2021 from SSRN: https://ssrn.com/abstract=2977427.

Al-Handhali B. A., Al-Rasbi A. T., and Sherimon P. C., (2020). Advantages and disadvantages of earning Management System (LMS) at AOU Oman. International Journal of Technology, 1(2), 222-228. Retrieved on December 30, 2021 from https://arivjournal.com/technology/advantages-and-disadvantages-of-learning-management-system-lms-at-aou-oman/

Aparicio, Manuela & Bação, Fernando & Oliveira, Tiago. (2016). An e-Learning Theoretical Framework. Journal of Educational Technology Systems. 19. 292-307. Retrieved on December 29, 2021 from https://www.researchgate.net/publication/290086485_An_e-Learning_Theoretical_Framework

Arkorful, Valentina. (2014). The role of e-learning, advantages and disadvantages of its adoption in higher education.. 2. 396. Retrieved on December 30, 2021 from https://www.researchgate.net/publication/348335311_The_role_of_e-learning_advantages_and_disadvantages_of_its_adoption_in_higher_education.

Aydin, C. C., & Tirkes, G., (2010). Open source learning management systems in e-learning and Moodle. In IEEE EDUCON 2010 Conference (pp. 593-600). IEEE. Retrieved on December 29, 2021 from http://www.ieec.uned.es/investigacion/educon2010/searchtool/educon2010/papers/2010s03f01.pdf

Chang, V (2016) Review and discussion: E-learning for academia and industry. International Journal of Information Management. ISSN 0268-4012 DOI: https://doi.org/10.1016/j.ijinfomgt.2015.12.007

Chua, B. & Dyson, L. (2004). Applying the ISO 9126 model to the evaluation of an e-learning system. Retrieved on December 14, 2021 from [PDF] Applying the ISO 9126 model to the evaluation of an e- learning system | Semantic Scholar.

Chua, B.B. & Dyson, L.E. (2004). Applying the ISO9126 model to the evaluation of an e-learning system. In R. Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds), Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference (pp. 184-190). Perth, 5-8 Retrieved on December 30, 2021 from http://www.ascilite.org.au/conferences/perth04/procs/chua.html

Comley, S.D (2007). Guella guide to teaching. New York. Continuum International Publishing Group

Dangle, Y. & Sumaoang, J.D. (2020). The Implementation of Modular Distance Learning in the Philippine Secondary Public Schools. Retrieved on December 14, 2021 from The Implementation of Modular Distance Learning in the Philippine Secondary Public Schools - Mokslinės Leidybos Deimantas - Diamond Scientific Publishing (dpublication.com).

Dede, C., and Bjerede, M., (2011). “Mobile learning for 1st the 21 century”. 2010 Wireless EdTech Conference. San Diego, CA: Qualcomm. Retrieved on December 14, 2021 from (PDF) Student's Perceptions on Mobile Learning | IJCSMC Journal - Academia.edu

Department of Education. (2020). Adoption of the basic education learning continuity plan (BE-LCP). Retrieved on December 14, 2021 from DepEd Order No. 012, s. 2020 - Search (bing.com).

Edinyang, S.D. (2001). Application of ICT in social studies education. Nigeria Journal of Social Studies, Vol 15(1) 2012. Retrieved on December 29, 2021 from https://www.researchgate.net/profile/Christiana-Ihejiamaizu/publication/325968125_application_of_ICT_in_Social_studies_education/links/6030a968a6fdcc37a83acba0/application-of-ICT-in-Social-studies-education.pdf.

UNDER PEER REVIEW

Franklin, T. & Peng, L. (2008). Mobile math: math educators and students engage in mobile learning. J Comput High Educ **20,** 69–80. Retrieved on December 14, 2021 from https://doi.org/10.1007/s12528-008-9005-0.

Galvin, A. T. (2017). The Use of Information and Communication Technology-based Science Re-sources by New South Wales Stage 3 Primary School Teachers (Doctoral dissertation), Curtin University.
Gautam, S. S., and Tiwari, M. K., 2016. Components and benefits of e-learning system. International Research Journal of Computer Science (IRJCS), 3(1), pp. 14-17.

Gilbert, B. (2015). Online Learning Revealing the Benefits and Challenges. *Education Masters.* Paper 303. Retrieved on December 30, 2021 from https://fisherpub.sjfc.edu/education_ETD_masters/303

Heinich, R., Molenda, M., Russell, J. D., & Smaldino, S. E. (2001). Instructional media and technologies for learning (7th ed.), Englewood Cliffs, NJ: Prentice Hall. Retrieved on December 29, 2021 from https://pdfgoes.com/downloads/instructional_media_and_technologies_for_learning_7th_edition.

Hew, K. F., Huang, B., Chu, K. W. S., & Chiu, D. K. W. (2016). Engaging Asian students through game mechanics: Findings from two experiment studies. *Computers & Education, 92-93,* 221–236. Retrieved on December 30, 2021 from https://doi.org/10.1016/j.compedu.2015.10.010

Hinostroza, J.. (2018). New Challenges for ICT in Education Policies in Developing Countries: The Need to Account for the Widespread Use of ICT for Teaching and Learning Outside the School. Retrieved on December 29, 2021 from https://www.researchgate.net/publication/320384691_New_Challenges_for_ICT_in_Education_Policies_in_Developing_Countries_The_Need_to_Account_for_the_Widespread_Use_of_ICT_for_Teaching_and_Learning_Outside_the_School.

Islam, Nurul & Beer, Martin & Slack, Frances. (2015). Managing Online Presence in the E-Learning Environment: Technological Support for Academic Staff. Journal of Education and Training Studies. Retrieved on December 30, 2021 from 10.11114/jets.v3i3.744

Isman, A. *Students' perception of a class offered through distance education*. Ph.D. thesis, Ohio University. Retrieved on December 29, 2022 from https://www.learntechlib.org/p/128906/.

Joshua, Jatmiko Wahyu & Swastika, I & Estiyanti, Ni. (2016). The Effectiveness of E-Learning Implementation Using Social Learning Network Schoology on Motivation & Learning Achievement. Jurnal Nasional Pendidikan Teknik Informatika (JANAPATI). Retrieved on December 30, 2021 from 23887/janapati.v5i1.9914.

Lenyatso, F. (2016). The North-East region ICT- pedagogy integration roll out project. (Unpublished report).
Ling, R. (2004). The mobile connection: The cellphone's impact on society. Retrieved on December 14, 2021 from The Mobile Connection: The Cell Phone's Impact on Society - Rich Ling - Google Books.

Martinez-Caro, E., Cegarra-Navarro, J.G. Y., Cepeda-Carrion, G. (2015). An application of the performance-evaluation model for e-learning quality in higher education. Total Quality

UNDER PEER REVIEW

Management and Business Excellence, 26 (5-6), 632-647. Retrieved on December 30, 2021 from https://hdl.handle.net/11441/71172.

Mathews, H. E. (2017). A comparison of the availability and utilization of audio-visual instructional materials in bookkeeping classes of Sacramento County public high schools (Doctoral dissertation).

Mayer, R. E. (2005). Cognitive Theory of Multimedia Learning. In R. E. Mayer (Ed.), *The Cambridge handbook of multimedia learning* (pp. 31–48). Cambridge University. Retrieved on December 30, 2021 from https://doi.org/10.1017/CBO9780511816819.004

National Council for the Social Studies (NCSS) (1993). "A vision of powerful teaching and learning in the Social Studies: Building Social understanding and civil efficiency"Social Education 57 (September) 13-23.

Nolasco, D.A. (2011). Development of a technology. Enhanced instructional guide in teaching sociology I. Unpublished Master's Thesis, Mariano Marcos State University, Graduate School.

OECD (2013). Education at a glance 2013: OECD Indicators, OECD Publishing. Retrieved on December 29, 2021 from http://dx.doi.org/10.1787/eag-2013-en

Pierce, R. & Ball, L. (2009). Secondary Teachers' Use of Technology for Teaching Mathematics. Retrieven on December 14, 2021 from 2214PierceBall.pdf (aare.edu.au).

Radu, F., Radu, V., and Croitoru, G., (2011). The advantage of the new technologies in learning. In: 10th international conference on artificial intelligence, knowledge engineering and data bases (pp. 150-155)

Raspopovic, Miroslava & Cvetanovic, Svetlana & Medan, Ivana & Ljubojevic, Danijela. (2017). The Effects of Integrating Social Learning Environment with Online Learning. The International Review of Research in Open and Distributed Learning. Retrieved on December 30, 2021 from 18. 10.19173/irrodl.v18i1.2645.

Rietsema, K. (2016). Learning Management Systems: A shift toward learning and academic analytics. International Journal of Emerging Technologies in Learning (iJET), 11(04), pp. 77–82. Retrieved on Dec 30, 2021 from https://doi.org/10.3991/ijet.v11i04.5419

Sarrab, Mohamed & Alshihi, Hafedh & Rehman, Osama. (2013). Exploring Major Challenges and Benefits of M-learning Adoption. British Journal of Applied Science & Technology. Retrieved on December 30, 2021 from 10.9734/BJAST/2013/3766

Schukei, A. (2020). Introducing students to the sensory experience of synesthesia. Retrieved on December 14, 2021 from Introducing Students to the Sensory Experience of Synesthesia - The Art of Education University.

Sharma, N. (2019). How mobile education apps are improving education system in the world? Retrieved on December 13, 2021 from https://elearningindustry.com/mobile-education-apps-improving-education-system-world.

Siemens, G. (2005). Connectivism: A learning theory for the digital age. International Journal of Instructional Technology & Distance Learning, 2, 3-10. Retrieved on December 30, 2021 from https://jotamac.typepad.com/jotamacs_weblog/files/Connectivism.pdf

UNDER PEER REVIEW

Som, N. (2006). E-learning: a guide book of principles. Procedure and practices: New Delhi: Common wealth educational media center for Asia (CEMCA). Retrieved on December 29, 2021 from http://hdl.handle.net/11599/53.

Talebian, Sogol & Movahed, Hamid & Rezvanfar, Ahmad. (2014). Information and Communication Technology (ICT) in Higher Education: Advantages, Disadvantages, Conveniences and Limitations of Applying E-learning to Agricultural Students in Iran. Procedia - Social and Behavioral Sciences. Retrieved on December 29, 2021 from 152. 10.1016/j.sbspro.2014.09.199.

Tanhueco-Tumapon, T. (2020). Education and the new normal. The Manila Times. Retrieved on December 29, 2021 from https://www.manilatimes.net/2020/06/04/campus-press/education-and-the-new-normal/729288

Tavanangerian, D. et al. (2004). E-learning the solution for individual learning, Journal of E-learning. Retrieved on December 29, 2021 from https://eric.ed.gov/?id=EJ1099252.

Ugwuanyi, C.S & Nwagbo, C.R. (2012). Challenges to Effective Utilization of Information and Communication Technology in Teaching and Learning. Global Journal For Research Analysis. 3. 48-50. Retrieved on December 29, 2021 from 10.15373/22778160/APR2014/17.

VanFossen, P.J. & Waterson, R.A.,(2008) “It is just easier to do what you did before…”: An Update on Internet Use in Secondary Social Studies Classrooms in Indiana, Theory & Research in Social Education, 36:2, 124-152, DOI: 10.1080/00933104.2008.10473369

Wikipedia. Org (2011). E learning from Wikipedia, the free encyclopedia. Retrieved on December 29, 2021 from http”en.Wikipedia.org/

UNDER PEER REVIEW