VOL VII

Educação:

Saberes em Movimento, Saberes que Movimentam

Teresa Margarida Loureiro Cardoso

(organizadora)

EDITORA ARTEMIS

2023

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EDITORA ARTEMIS
2023

Editora Artemis
Curitiba-PR Brasil
www.editoraartemis.com.br
e-mail:publicar@editoraartemis.com.br

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Dados Internacionais de Catalogação na Publicação (CIP)
(eDOC BRASIL, Belo Horizonte/MG)

E24 Educação [livro eletrônico]: saberes em movimento, saberes que movimentam VII / Organizadora Teresa Margarida Loureiro Cardoso. – Curitiba, PR: Artemis, 2023.

Formato: PDF
Requisitos de sistema: Adobe Acrobat Reader
Modo de acesso: World Wide Web
Inclui bibliografia
Edição bilíngue
ISBN 978-65-81701-08-6
DOI 10.37572/EdArt_281123086

1. Educação inclusiva. 2. Prática de ensino. 3. Professores – Formação. I. Cardoso, Teresa Margarida Loureiro.

CDD 370.71

Elaborado por Maurício Amormino Júnior – CRB6/2422

EDITORA ARTEMIS
2023

Editora Artemis
Curitiba-PR Brasil
www.editoraartemis.com.br
e-mail:publicar@editoraartemis.com.br

APRESENTAÇÃO

Neste volume VII da *Educação: Saberes em Movimento, Saberes que Movimentam*, o leitor reconhecerá um conjunto de epítetos que são atribuídos à educação. Pode, portanto, ir ao encontro, por exemplo, da educação a distância, da educação contínua, da educação pré-escolar ou da educação ambiental, esta em estreita articulação com a sustentabilidade, ou não fosse este também um dos prementes e acutilantes desafios da atualidade, que nos incita à intervenção, num "apelo urgente à ação de todos [...] para uma parceria global"[1].

Além disso, o leitor poderá querer ancorar a sua intervenção na pedagogia e na didática, em propostas de cooperação, de avaliação e de comunicação. Ou, ainda, na interculturalidade, enfim, na diversidade, visível igualmente nas diversas áreas curriculares que permeiam mais estes *Saberes em Movimento, Saberes que Movimentam*. Ao leitor caberá sempre a liberdade última de escolher os seus percursos, e de, mergulhando naqueles capítulos que suscitem o seu interesse e que mereçam a sua atenção, delinear porventura as mudanças da e na *Educação*, com "uma maior ambição e sentido de urgência"[1].

Teresa Cardoso

[1] https://ods.pt. Acesso em: 24 nov. 2023.

SUMÁRIO

CAPÍTULO 1

COOPERATIVE ASPECTS OF LEARNING WITH AN ASSESSMENT CONCEPT SCHEME THROUGH INTENTIONAL COMMUNICATIONS EXTENDED FOR DISTANCE LEARNING

Data de aceite: 20/11/2023

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ABSTRACT: In distance learning, it is no exaggeration to say that one of the most important issues and matters is learning quality assurance. Learners are prepared for cooperative aspects of learning on an educational core leading scheme with an assessment and make use of such a scheme through intentional communications extended with reconfirmation as dynamically conducted, for a learner-based driving force with a mobile focus. More advanced comprehensions are extended improvements for teaching and learning on a platform verified in practice. The introduction of subjects which may help readers visualize learners' advanced comprehensions, and for the extensions leading to learning quality, has been studied. Introducing online assessment scheme applications, according to circumstances, could be effective in class. Forms of communication which are able to capture both a core leading scheme and an assessment scheme are being deliberated for advanced comprehensions and for the extensions to learning quality in STEM to STEAM, by integrating the Arts. Thus, it can be feasible to introduce cooperative aspects of learning into concept mapping-based assessment for a more highly objective learning quality assessment through intentional communications extended on a real-time basis. It is expected that the form and roles of distance education and learning will rapidly emerge from the current conventional methods and lead to more innovative approaches which provide more extensive options in educational and/or learning processes, including the concept of a lifelong educational model, which are required to widely empower individual learners with qualitative rationality and sensibility. It may be effectual to find, through cooperative aspects of learning and assessment with detailed analysis on questions and answers, a trial solution for advanced software paradigms which come to a possible approach for a high-quality software design process and its verification with transparencies in instances when software is more dominant than hardware, and therefore conducted differently from the conventional software design process accompanied with hardware constraints. On the background, a possible answer to design critical and creative thinking integrated rubrics with an aid of the software paradigms may be alluded to.

KEYWORDS: Cooperative aspects of learning. Concept map. Learning quality. Rubrics STEAM learning. Digitization of education.

1 INTRODUCTION

From a historical point of view, typical distance education and learning have been categorized as a matter of convenience: e. g. such as 1st to 3rd and also next generations. Even now, it is not currently sufficient to take notes for such methods as up to date distance education and learning. A completely digitized and electronic distance education and learning environment is not necessarily a final destination for higher education situations. At the same time there are some typical e-learning systems in synchronous or asynchronous model environments.

It is no exaggeration to say that one of the most important issues and matters is learning quality assurance: e.g. What is deep learning in distance learning environments? Still more, what is the reality of learning? and so on.

In a sense it may be strictly related to something like the substance of learning, from a general point of view. And moreover, for instance, it is not so easy even to discuss the assessment of qualitative and quantitative views in detail. In this research, critical thinking and creative thinking integrated rubrics are proposed for advanced comprehensions in distance learning with a mobile focus.

2 ON AN EDUCATIONAL CORE LEADING SCHEME WITH AN ASSESSMENT

Many kinds of R&D results from typical case studies have been published and demonstrated in domestic or international public areas. As compared with other educational environments (e.g.; electronic media-based, or satellite-based systems), interactive communications may be discussed here towards better and more agile educational situations in information environments on a high speed and widespread network with intelligent electronic media.

Generally speaking, an interactive communications environment often means a bi- directional communication, with the difficulty of highly intentional communications on a real-time basis, which could have been realized in a historical education system such as "*terakoya*" in Japanese culture [1][2][3][5][6]. These issues and matters have been discussed for possible solutions in published papers and open lectures or seminars. As an example, one of the case studies has been extended to include a mobile focus on distance educational situations for better understanding.

Many years have passed since methods to acquire knowledge and to share such a domain, in a cognitive manner, affective to psychomotor domains, continued to be discussed for learning, teaching and assessing on a revision of Bloom's taxonomy of educational objectives. It is necessary now, to introduce and create a dynamically

advanced comprehension in small-to-large range educational processes, cooperatively with integrated case studies.

Typical events have been found to occur in educational sites from elementary to higher public educational institutions. As compared with the conventional ones, distance learning techniques have changed remarkably in volume and quality so with the advancement of information technology (IT), despite being at unbalanced stages in their situations. As a result, for instance, people all over the world are globally and/or locally influenced by each other from a widespread range of politics, economics, business, education, and culture, to social, regional, and even personal situations. According to the research context, IT basic impacts on educational and social environments are reviewed to suggest the following:

2.1 IT BASIC IMPACTS ON EDUCATIONAL AND SOCIAL ENVIRONMENTS

#1. From material mobility in the real world to "abstract mobility" based on information mapping; e.g. human behaviors and activities are becoming more timely, and can be amplified and extended on an intelligent and/or physical capability basis.

#2. "Information cost,"; has been reduced remarkably; e.g. anyone can attend more co- operative works on the reconstruction of information environments not only on a larger scale or bigger capital basis.

#3. "Information productivity,"; has greater possibility to be revolved and increased both on individual and organizational sites; e.g. economic trends in both investment and consumption can be greatly influenced and changed.

#4. "Information transitional states and phases,"; can be widely affected in personal, group, and mass communities; e.g. mutual relationships such as instructor-students, to enterprise-customers have been changed at large. The middle layers can now be merged any situation, at the same time with newly produced coordination.

#5. The sovereign powers in any region, can be greatly shifted or distributed for "information initiatives," e.g. reciprocal dynamics can be changed at large and terminal users or beneficiaries can be predominant over predecessors.

#6. Widely "integrated intelligence and know-hows" can be more available from local to public connections in any information environment; e.g. open policies and concepts can be more advantageous than closed ones, including confidence.

#7. Newly expressive “electronic media tools”, activity manners or styles, can be developed and diffused on the basis of viewpoints on value-added theories; e.g. traditional family-based units to social structures may be more adaptive for the next generational phase.

#8. Conventionally “deep-rooted constraints” including space-time dimensional factors, can be extraordinarily overcome and more controllable; e.g. many kinds of handicapped matters can also be overcome and gradually integrated to create a new worth based on value-added theories and principles, or sometimes on merit-demerit or strength-weakness situations and as such, can be reversed.

#9. From one dimensional utilitarianism to “more multi-dimensional and higher quality principles,” can be explored with an introduction of intelligence using electronic media; e.g. QOL (quality of life) can be pursued with the diffusion and use of deeper knowledge, and higher intelligence.

#10. Basic “media literacy” is strongly needed to properly process information and to extend to an affluent daily life with a higher QOL; e.g. Literacy basics on classical abacus, symbolic computing/cultural computing, networked webs, intelligent electronic media to cyber space can be discussed as important fundamentals of ordinary life.

In such lectures or seminars as conducted on a practical site, it have been verified on a trial platform in the research that it enables learners to develop a more advanced comprehension, which could be assumed to be feasibly based on all of the human cognition to creation through intelligence, together with potential skills up to a formed character. At the same time, there might be standpoints for keeping aloof from the others, depending on the respective learners’ position there. Moreover, it should be pointed out, to begin with one of the simplest types of media (e.g. web-based message board) among various kinds of multimedia telecommunications.

There are typical basic concepts, concrete schemes and clinical practices on real higher educational sites that have been integrated in cooperative learning. An example of educational core leading scheme with an assessment is on a platform, which may be assumed principally similar to that on a primitive platform as referred to Figure 1 and 2.

Figure 1. An example of the most concise forms in intentional communications.

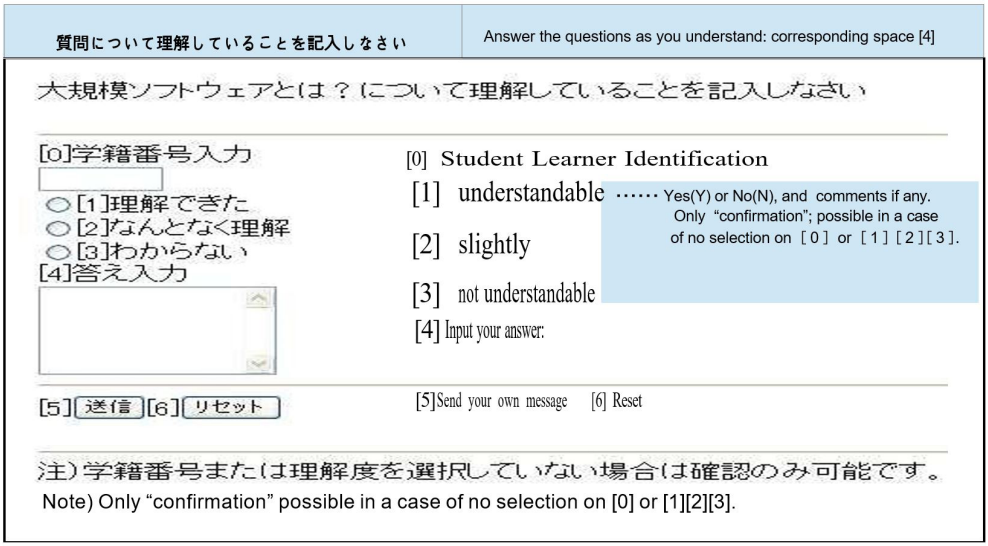


Figure 1 is an example of the most concise forms (Q/As) in intentional communications which enables higher quality communications to be consistent with any educational environments, Q/As: Development strategy for software design in quality control on diversely multi-dimensional modeling: e.g. a case study on a natural phenomenon in the existing circumstances.
Note) question and answers; denoted Q/As.

Figure 2. A practical case study on intentional communications extended with educator functionality.

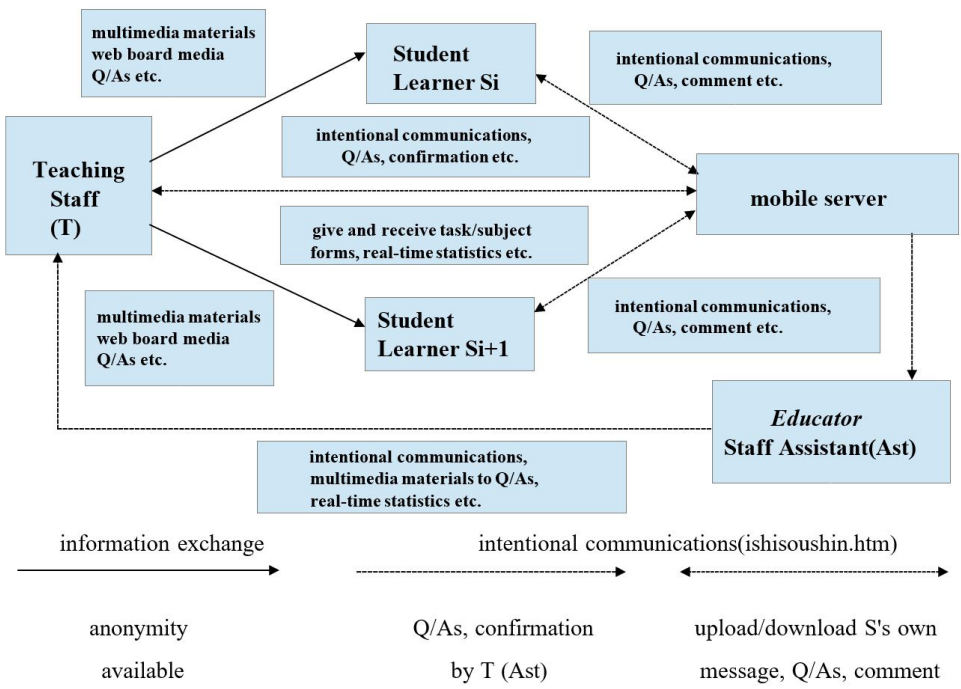


Figure 1 shows an example of the most compact forms in intentional communications which enables high quality communications to be consistent with any educational environments in the research. It should be assumed for anyone, not only teaching staff but also student learners with leadership roles to take a part as an educator under the necessity of advanced comprehensive processes.

As one of the simplest implementations, Figure 2 shows one of the case studies for a real educational setting, to be focused on essential parts in more advanced comprehensions in cooperative learning. In Figure 2, including questions and answers (denoted Q/As), teaching staff, staff assistants, and student learners are denoted T, Ast and S1, S2,.., Si, Si+1,.. (here i: integer), respectively.

With intelligent electronic media in local to social networked environments, which have been more widely and thoroughly cultivated and integrated within educational and cultural situations, it would be more feasible to educate learners about their communication ability for cognitive to psycho-motor domains with physically sensible communication skills. At the same time it could be possible to precisely grasp a mutual comprehension based on both the human brain and a more physical kind of intelligence regarding individuals to larger communities.

With an introduction of mobile terminals, which have been more widely and deeply cultivated under cultural situations, it would be more desirable to educate communication ability for cognitive, affective, or psycho-motored dialogues with a mobile focus on smoother intentional communication skills.

Under these considerations, several typical research studies have been undertaken, as shown in the author's related references [1][2][4][6][9][12]. Fundamental communications in education are also to be argued, which are similar to those in an international conference or meeting.

3 DESIGN CONCEPT AND MAPPING FOR CRITICAL AND CREATIVE THINKING INTEGRATED RUBRICS

A concept map was originally begun to research and develop the natural scientific fields, and there have not been so many results of breakthroughs for learning quality assurance, especially leading to assessment in scientific fields relating to human culture[1][10]. At the same time, for instance, many years have passed since theories of artificial intelligence, and human brains begun to be discussed among many kinds of specialists. It cannot be said that the mechanisms for knowledge acquisition has become clear until now. Moreover, there are likely so many methods on how to acquire knowledge in detail

because it depends largely on the individual learners' brain activities (intelligence and behavior and so on) and their data/knowledge bases [2][9][11][15][16]. Therefore, an attempt has been conducted to introduce the subjects as a way to help readers visualize learners' advanced comprehensions on a real-time basis in distance learning, and also for the ex- tensions leading to learning quality. In the next section, design concept and mapping are described.

As compared with typical rubrics, the items that should be noted are as follows: e.g. stated objective or performance evaluation visible for learners, learning activities scaling is fair and swift, possibly real-time feedback of learning outcomes on rubrics in distance learning, from the viewpoints of software values on a core leading scheme. The general rubrics are intended for common use in evaluating and discussing surface level to deep learning or learning performance, not for grading. Here, the rubrics are also intended to implement dynamic scaling for each grade, according to learning quality on a real-time basis. These rubrics articulate the criteria for each comprehensive outcome, with performance descriptors verifying more sophisticated levels of advanced comprehensions. In the research and development these integrated rubrics are basically designed for the following widespread range of purposes: Conceptual explanations of issues/problems, Evidence documents, selecting/using on a point of view or conclusion, Influence of context and assumptions, Learner's position (thesis, hypothesis, perspective), Conceptual con- tents, Concept formation, Linkage spanning, Relationships of linkage, Descriptions centered on a thesis, Conclusion & outcomes, as referred to in Appendix 1.

4 ASSESSMENT METHODS FOR INTEGRATED RUBRICS

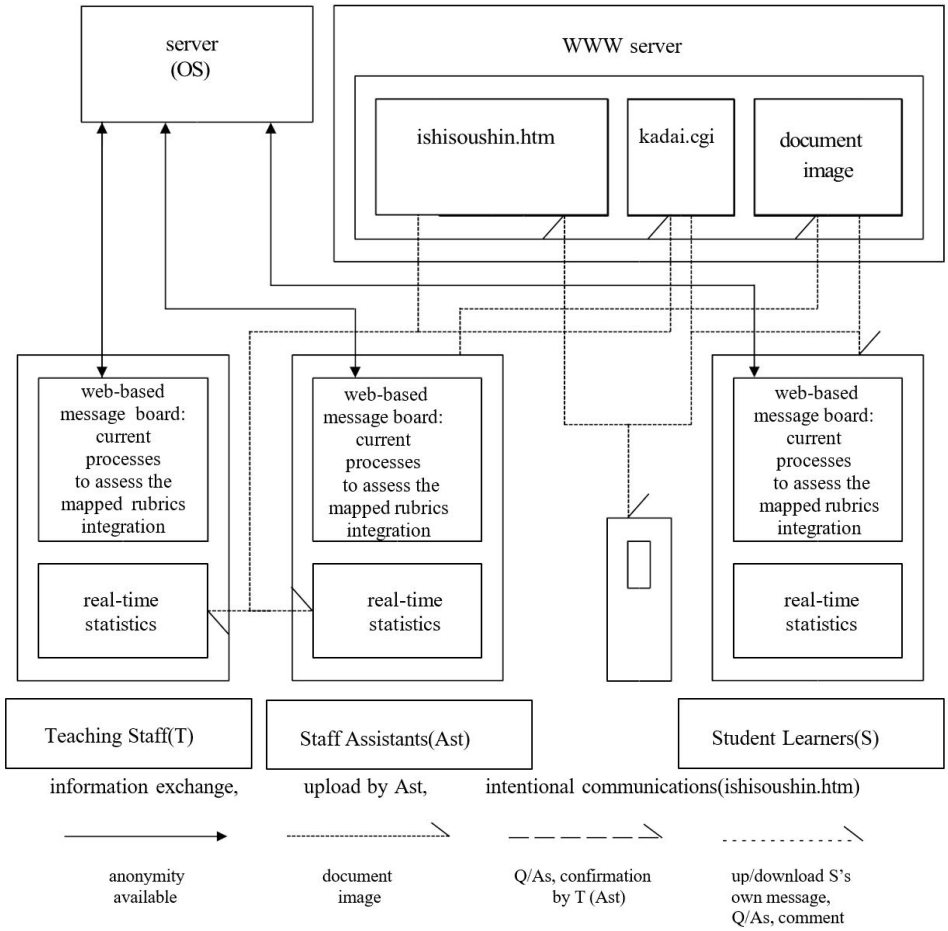
The essential capabilities of integrated rubrics have been extended for smoother communications and conceptual learning models into a multimedia computing environment. Multimedia telecommunications designs and experiments have also been studied to overcome their limitations on going through a process of critical thinking/ creative thinking with quantitative learning evaluation results in a practical manner [2]. Software core leading schemes have continuously been designed for advanced comprehension on the basis of such a software concept scheme as previously referred to complex software design paradigms available even for non-experts[1][2][6][12]. In particular, the recent electronic network is becoming richer in all of the real human senses, including the audio, visual and physical ones which continue to prove a greater effect on the common space through multimedia telecommunications on a simultaneously

local to widely spread network with the combination of more technologically directive sound/voice and image extensions. Some case studies have been conducted using an example of the most primitive platforms on a descriptive basis with more technologically directive sound/voice and image extensions in cooperative drawing projects requiring additional clues for deliberations based on native sensibilities regards to mutual chats or whispers, which have increased in both speed and quality. Here, as referred to previously, the rubrics are intended also for dynamic scaling in each grade on a real-time basis. The rubrics articulate criteria for each comprehensive outcome with performance descriptors verifying more sophisticated levels of advanced comprehensions. There are three phases required in the integrated rubrics process, as follows:

- In the first phase, a student learner is able to credit an amount to himself or herself with a self-rating of points that are independently judged to get an advanced comprehension.
- In the second phase, learners could be divided into multi-groups with the same range of points according to the progress of advanced comprehension. Among the group, points are given to and by other learners as soon as they are approved by some other learners. The point count of these learners depends on the individual criteria in the rubrics.
- In the third phase, the individual learners' group is given weighted point-values by common consent of teaching staff, educator and student learners with leadership positions. The accumulated weighted points are the individual learners' points that are finally obtained; e.g. distinct member learner/ prestigious learner with leadership.

Such processes could also be continued for learning more in an advanced comprehension, at the same time with processes in the rubrics [13][14]. It should be noted that more advanced comprehensions are extended for additional improvements together regarding how to learn on a platform verified during the process of lectures or seminars, where interactions effectively occurred through mutually intentional communications between learners and teaching staff, or among learners connected in distance learning with a mobile focus. Moreover, methods to introduce any kinds of rubrics extended for advanced comprehensions should be studied further in a widespread range of scientific fields relating to human culture. The rubrics would be expected to extend for such next higher-level rubrics as a creative thinking rubric, as implicitly shown in Figure 3 with Appendix 1.

Figure 3. An overview of assessment schemes applications for integrated rubrics through practically intentional communications extended in a multimedia computing environment.



Note) questions and answers: denoted Q/As.

From the viewpoints of research case studies, it is in a trial stage in the current research. It is possible to obtain experimental data on the individual student-learners' progressive situations at the initial phase for advanced comprehensions. And, as a result, it means it may be effective so as to empower individual learners with qualitative rationality and sensibility through human physical communications as deeply as possible with a mobile focus in distance learning: e.g. towards a better understanding of artistic value and/or cultural significance on practical environments.

In addition to the above, design problems are as an example of the most important and difficult issues/matters in engineering education to be specifically targeted in the research. Design knowledge may also be assumed to be deeply diverse in a more

widespread range and to be necessary to come to full maturity in actual design through practiced experiences, especially in software conceptual design. It may be effectual for research members to find, through cooperative aspects of learning and assessment with detailed analysis on questions and answers, a trial solution for advanced software paradigms which come to a possible approach for a high quality software conceptual design process and its verification with transparencies in instances when a software concept is more dominant than hardware, and therefore conducted differently from the conventional software design process accompanied with hardware constraints. At present it may not be so easy to take human-like intentional communications on human self-initiative or extemporaneously between each other in real space and in cyber/virtual space, even if it is attempted to be artificially filled with creative power through placement of thoughts or feelings into the entity via metaverse: cf. meta human or avatar/metaverse. On the background, a possible answer to design such critical and creative thinking integrated rubrics as described so far, with an aid of the software paradigms may be alluded to.

5 CONCLUDING REMARKS

It is a fact that placing people in the same room, seating them together, telling them they are a group, does not mean they will cooperate effectively. It should be positively suggested how to successfully integrate vivid human knowledge and intelligence with less confusion or disturbance. It should be noted that introducing online rubric scheme applications into distance learning, according to circumstances, could be effective in practice. Going forward, additional case studies with a variety of situations are needed to integrate verification on the validity of integrated rubrics in a wider range, which are closely related to additional clues for deliberations based on eminent concepts extending towards sensibilities conversant with artistic value and/or cultural significance in both scientific and human culture fields. Increasingly, forms of communication which are able to capture both an educational core leading scheme and an integrated rubric scheme are being deliberated in distance learning for a more advanced comprehension with a scope of regional to interdisciplinary worth, which is greatly needed, e. g. STEM (science, technology, engineering and mathematics) to STEAM, by integrating the Arts.

Thus, it can be feasible to introduce cooperative aspects of learning into concept mapping-based assessment for a more highly objective learning quality assessment through intentional communications extended for distance learning on a real-time basis. It is expected that the form and roles of distance education and learning will rapidly emerge

from the current conventional methods and lead to more innovative approaches which provide more extensive options in educational and learning processes, including the concept of a life-long educational model, which are required to widely empower individual learners with qualitative rationality and sensibility.

APPENDIX 1

Appendix 1. Concept mapping-based assessment.

Critical Thinking & Creative Thinking Integrated Rubrics

	Capstone 4	Milestones 3 to 2		Benchmark 1
Conceptual explanations of issues/problems	Stated clearly and comprehensively, delivers all information for full understanding.	Stated so that understanding is not seriously impeded by ambiguities.	Stated, but with some unclarified terms, regions, backgrounds or ambiguities.	Stated, without any clarified terms, descriptions, etc.
Evidence documents, selecting/using on a point of view or conclusion	Derived from sure sources for advanced comprehension. Well-reasoned viewpoints of experts.	Derived from sources well enough for comprehension. Enough viewpoints.	Derived from insufficient sources for comprehension. Sources are uncritical.	Derived from sources without any thought. Omission of expert opinions.
Influence of context and assumptions	Thoroughly analyzes own and others' assumptions, and carefully evaluates contexts when presenting a position.	Identifies own and others' assumptions,and evaluates several contexts when presenting a position.	Questions some assumptions. Identifies several contexts when presenting a position.	Shows an awareness of assumptions, but also some label assertions. Begins to identify contexts.
Learner's position (thp: thesis, hypothesis, perspective)	Specific position (thp) is imaginative, and takes into account the complexities of an issue. Limits of position are acknowledged. Others' points of view are synthesized within a position.	Specific position (thp) takes into account the complexities of an issue. Others' points of view are acknowledged within a position.	Specific position (thp) acknowledges different sides of an issue.	Specific position (thp) is stated, however, it is simplistic and obvious.
Conceptual contents	Perceived that if full of relevant concepts, use is good.	Most concepts are others taught in classes, except for a few limited ones.	Scarce concepts. Many more improper ones are included.	Under Milestones 2.
Concept formation	Able to timely make the best use of concepts for advanced comprehension in a timely manner.	Makes an effort for an original formation, but is restricted.	Not easy to make such a formation, including original ones.	Unable to make such an effort.
Linkage spanning	Many proper linkages are spanned among concepts. Flexible structures are feasible: hierarchy up to plexus with complexities.	Not so many proper linkages. Hierarchical or branching ones are not enough. Partial crisscrossing found.	Spanned linkages are improper. For example, hierarchical or branching ones are not found, as well as with more complex ones.	Under Milestones 2.
Relationships of linkage	Many meaningful ones are included and are suggested also among linkages.	Many are included, but such improper linkages are found.	Few are included and many improper linkages are found.	Under Milestones 2.
Descriptions centered on a thesis	Conceptual mapping is focused on the thesis and completely expressed without inconsistencies.	Conceptual mapping is related to the thesis but restricted to partial relationships.	Make an effort to center on the thesis. Such mapping is slightly unrelated.	Under Milestones 2.
Conclusion & outcomes	Conclusion and related outcomes are logical and reflect learner's evaluation and ability to show evidence or thp, discussed in order.	Conclusion is logically tied into a range of data, including other views; related outcomes are identified clearly.	Conclusion is logically tied to data (which is chosen to fit); some related outcomes are identified clearly.	Conclusion is inconsistently tied to some data discussed; related outcomes are oversimplified.

Note) thp: thesis, hypothesis, perspective. Specific position includes a thesis (to be centered), hypothesis or perspective.

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SOBRE A ORGANIZADORA

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