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CoastLearn: Lessons learnt from a web-based capacity building in Integrated Coastal Zone Management (ICZM)

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ABSTRACT

The capacity building initiatives for the Integrated Coastal Zone Management (ICZM) intend to create, in a worldwide perspective, a capable critical mass. CoastLearn is one of such outstanding efforts. Through the application of questionnaires to students and to the course coordinator, in addition to its website information, positive features and also aspects that can be improved were recognized. This paper aims at establishing some statements and providing recommendations about aspects to be considered by ICZM capacity building efforts. The outstanding recommendations are the development of feedback policy, the creation of online tutors and discussion forums, always considering the attendants' needs.

1. Introduction

The coastal and marine resources represent a significant patrimony for the construction of a sustainable world. The total value of its commodities and ecological services are estimated in $21 trillion dollars annually – 70% above the terrestrial systems [1].

The strategic relevance of the coastal zone, including the Coastal Resource System, is reaffirmed when we consider that: approximately 2.8 billion people live closer than 100 km from the coast; one billion people, mainly in developing countries, depend on fish as their main source of animal protein and 90% of the commercial fisheries are captured in coastal regions [1].

Coastal areas have traditionally suffered from a range of conflicting resource use pressures which have been exacerbated by inappropriate forms of managerial intervention [2,3]. For millennia, the coastal zone has been used by humankind and in spite of that, the efforts to manage specifically the coastal zone and its resources are recent.

The Integrated Coastal Zone Management (ICZM) is the most expressive effort heading to the sustainable use of the coastal resources. It is linked inextricably to the three pillars of the sustainable development: social progress, economic growth and environmental protection [4]. ICZM focuses mainly on harmonization, participation and strategic planning to reach sustainable development in coastal areas [5–7].

According to Vallega [8], ICZM and sustainable development are both characterized by ambiguity and are extremely difficult to be put into practice. The success of ICZM and sustainable development depends on personnel capabilities.

To create a critical mass capable of developing the ICZM, education and, more specifically, capacity building initiatives are a preceding step. An effective capacity building program designed to specific target groups, presenting proper methodology, regarding precise contents and goals, can reduce the obstacles faced during the ICZM implementation. That is the reason why capacity building figures as an inexorable partner of ICZM and sustainability, being a fundamental obligation to the coastal society [9,10].

Capacity building efforts in ICZM use several methods to reach a significant range of stakeholders like short-term, long-term, tailor-made, module based and mixed design courses [11,12]. In spite of those efforts, such knowledge arrives at a still limited number of coastal actors, or stakeholders, and many other actors involved in this process are still marginalized. The entire poll of ICZM actors require some level of understanding to ensure sustainable use of coastal resources and the ICZM process [13].

Insofar, there are a limited number of stakeholders reached by the available capacity building efforts due to the fact that the developers of such courses do not consider the real needs of the target group or even the most appropriate method to reach this public.

Related to that, UNESCO–UNEVOC [14] affirms that "ICZM messages and ideas must be developed and delivered through well-targeted methodologies at the national, regional and international levels for a variety of actors such as policy-makers,

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decision-makers, managers, teacher trainers, educators and volunteers". On top of that, Flanigan [15] proposes that capacity building efforts, in a general manner, were more efficient when designed to meet particular needs of local coastal managers, delivered at the local level, based on already existing training programs and when combined theory with field experience [16].

Considering the facts above, the main objective of the present article is to analyze a capacity building effort focusing on the improvements to reach such ideal characteristics. It also points out at positive aspects. For that, the students' and coordinator's opinion about the course were compared, trying to understand the differences and aiming, furthermore, at providing new insights and vital aspects to be considered for new courses, representing a step forward in the way of effectively meeting the attendants' needs.

Developed based on previous researches, the present method can be easily replicated in different ICZM capacity building courses all around the globe, considering local needs.

The web-based CoastLearn, which is a widespread course among Central and Eastern European Countries, was selected as a study-case due to its unique characteristics of extreme flexibility and gratuity. It is a mixed design course with independent modules and is available in 11 languages. It was created after the request of official representatives from non-EU countries surrounding the Baltic, Black, Mediterranean and Caspian Sea during the congress about ICZM in Central and Eastern Europe countries. Because of its modular approach, the first five modules were ready in 2001 and additional modules and language versions were added up to 2005. The course runs at international level to the surrounding European areas, mainly in the Eastern European Countries[1].

Some gaps in comparable information about the ICZM capacity building were recognized and two types of questionnaires[2] were developed according to the research objectives, to cover the lacking information. One type was dedicated to the students and the other to the course coordinators. The application of these questionnaires, as a low coast and easy to apply technique, supplied the minimum set of comparable parameters.

2. Methodology

2.1. Questionnaires development and analysis

The development of the questionnaires was based essentially on two surveys: Cicin-Sain et al. [17] and ENCORA [18]. The first one aimed at characterizing the contents of the available ICZM capacity buildings worldwide. The second survey proposes the minimum knowledge needed for coastal management practitioners.

To analyze CoastLearn, the concepts and knowledge were compared to the basic knowledge proposed by the authors above. The knowledge needed by a coastal manager was divided in four different topics, as proposed by ENCORA (*op cit*): (i) basic concepts, (ii) geographical focused information, (iii) level of management and (iv) ICZM stages. The attendants attributed levels for each of them and also a general level, which considers the overall knowledge delivered by the course.

In addition, the method proposed by Buldioski et al. [11] was used to create the questionnaires and to analyze them as well. This method categorizes learning zones in which students operate. For the present article, the most important zones are three: the *comfort zone*, the *stretching zone* and the *panic zone* (Fig. 1).

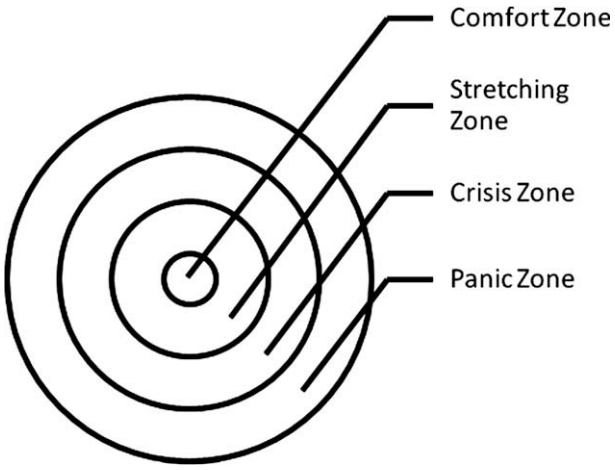

Fig. 1. Division of the zones during the courses development. *Source: Buldioski et al. (op cit).*

The basic difference between the *comfort zone* and the *stretching zone* is the fact that the first doesn't offer changes in personal values, convictions and perceptions while the second makes the attendants reflect on their own and others' perceptions, attitudes or behavior. The *panic zone* is characterized by a threatening area, where an abrupt impact imposed by a new paradigm makes the student feel insecure and protect his/her previous ideas. Between the *stretching* and the *panic* zones lies the *crisis zone*, where the energy may be focused constructively to provide any kind of learning.

The *stretching zone* figures as the optimum zone for the Integrated Coastal Zone Management learning, since the participation in ICZM programs requires individual or organizational skills or knowledge improvements [19].

The attendants' willingness to learn is generally determined by personal aspects, however, courses can move students from the *comfort* to the *stretching zone* more effectively if they consider participants' needs and expectations, participants' previous knowledge, responsibility for the learning process, group size and development, use of the environment, space and resources of the group, structure and flexibility in the program preparation and time planning.

The SMART technique, another consideration by the same author, was also used to evaluate, through the students' answers, to what extent the course is providing: Specific details, with Meaningful information, fitting Appropriately the purpose of the course, using a Realistic approach and presenting Testable results (see page 9).

On top of that, the method proposed by Le Tissier et al. [20] poses the differences between a serialist and a holistic approach (see page 9). Theoretically, a holistic approach is more interesting to an ICZM course, since the integration depends directly on the understanding of all the aspects involved. This method was used to analyze which of these characteristics the course tends to present most frequently.

2.2. Questionnaire contents

The five-page questionnaires for the coordinators and students were divided, respectively, in five and four sections (Table 1).

Both questionnaires contain three different sorts of questions: Closed Questions, Ranking Questions and Open-ended Questions.

The *Closed Questions* ask the participants to select an answer that mostly matches the characteristics of the course. If, in any of the questions, the respondent didn't find an appropriate answer,

[1] The Eastern European countries considered by CoastLearn are: Estonia, Latvia, Lithuania, Poland, Romania, Bulgaria, Turkey, Former Yugoslav (Republic of Macedonia), Albania, Montenegro, Bosnia and Herzegovina, Croatia and Slovenia.

[2] Questionnaires are available at the site www.coastalandwatermanager.com/questionnaires.

Table 1
The questionnaires contents: coordinators' topics (column 1), contents of each coordinator topic (column 2), students' topics (column 3) and contents of each student's topics (column 4)

Coordinators Questionnaire Sections	General Subjects	Students Questionnaire Sections	General Subjects
General Information	Basic information about the course; basic methodological approach; need for "presence" (%); fees scholarship availability; course creation; course promotion.	General student and course information	Basic information about the course and the students; which course; why that course.
Students Information	Limitation factors for stakeholders; students selection; previous knowledge needed; target group; profile needs;		
Methodology Information	How the course is delivered to the students; didactic materials; improvement along time; disciplines emphasis; ICZM levels covered by the course; problems tackled; regionalization.	Methodology Information	Most important information from the questionnaire to compare: knowledge delivered; students motivation; the knowledge demanded from coastal managers; level of knowledge delivered.
Results Information	Period after the education process; professional profile expected; fulfillment of students' expectations; tracking tools; effective application of the knowledge by the attendants	Outcomes information	Period after the education process to define the course effective influence: dissemination of the knowledge by the attendants; attendants' new profiles; education effectiveness;
Expert Judgment	General coordinators' opinion about different issues		
Top of mind	Resume their ideas about: positive points; negative points; main target group.	Top of mind	Resume their ideas about: good and bad aspects of the course; proper target group.

she/he was asked to include a suggestion in the end of the questionnaire.

At the *Ranking Questions*, the respondents were requested to rank the available answers. The number increases as much as the suitability decreases.

Finally, the *Open-ended Questions* presented specific areas to receive the respondents' comments about the subject which the question was focused on.

The questionnaires had a filling-up time of approximately 18 min for the coordinators and 12 min for the students. The time difference is basically due to the larger amount of open-ended questions in the coordinators' questionnaire.

2.3. Questionnaires submission

The submission of the questionnaire followed the method proposed by Giddens [21] through e-mail (Table 2).

It is important to point out that during the present research the questionnaires to the students were sent to the coordinators (second step of the process) who were supposed to forward the questionnaires to their students, since it was the will expressed by some of them. However, it seemed not to be the most appropriate strategy because it was not possible to recognize the cause of the low rate of responses: if the students didn't answer or if they did not receive the questionnaires to be answered.

3. Results and discussion

Five students answered the questionnaires about CoastLearn in addition to the questionnaire answered by the coordinator. The website review contributed with a third point of view, comparing both available literature information in capacity building and the website review.

3.1. Analyzing students' questionnaires

3.1.1. Students characteristics

The Environmental Sciences was the previous degree obtained by the respondents in graduate level and post-graduate levels. It was pointed out that their previous knowledge helped them to take more advantage from the course, in spite of the fact that specific previous background was not a requirement. The only requirement asked from the attendant by the CoastLearn organizers was to be responsible for or interested in coastal management and sustainable development. According to the coordinator of the course, any previous knowledge would be useful but being motivated was essential.

Many students considered that the main motivation to take the CoastLearn course was the professional need and personal interest, in addition to meet some requirements. On top of that, the unavailability in their own countries was also pointed out. Although the CoastLearn does not provide certification, one attendant considered the provision of certification as the main reason to take the course. This answer points out that the CoastLearn is being used as a Coastal Management teaching tool by courses that provide certification. The fact that positive answers were obtained about the obligation of fee payment, and the CoastLearn was developed to be free of charge to reach more attendants, corroborates such theory.

Most of the interviewed attendants believe that the payment of tuitions and fees is a considerable limiting factor. For politicians and

Table 2
The questionnaires submission method based on Giddens (*op cit*)

	Timing	Contents
First contact	Day 0	Presentation letter about researcher, research, methods explaining the importance of his/her cooperation;
Submission of the set of questionnaires	Until Day 7 (right after cooperation approval)	Set of questionnaires, letter explaining how to fill out the questionnaires and deadline;
First invitation for answers	Day 14	Gratitude to early responders and reminding the importance of their participation;
Second invitation for answers	Day 21	Invitation to answer, with new deadline and offering the possibility of replace questionnaires;
Last invitation for answers	Day 28	Reminding their importance to the process, communicate that it is the last opportunity to cooperate;
Thanking communication	Day 29	Letter thanking the cooperation.

managers, other aspects could be considered limiting factors like contents difficulty, methods of the course and its time consumption. These limitations depend, relatively, on different aspects like the attendants occupation.

During the research, the attendants were asked about their main activities before and after the course. The attendants' main activity before the course appears to be respectively: researchers; education sector workers and planning activities. After the course, this rate was the same. The fact that not even one attendant considered him/herself a *manager* before or after the course was interesting. Noteworthy is the fact that the attendants believe that the primary target group of this course should be, in the first place, coastal managers, and in the second place, elementary students on coastal zone management and people involved in management of coastal areas.

The course seems to be reaching the scientific society more than coastal managers at local level. The coordinator pointed out that the course has been receiving more feedbacks from the Universities since the course has more contact with those if compared with the other potential attendants.

It is not possible to conclude if the other target groups are being reached. But if so, it is interesting to realize that the course was designed for coastal managers and it seems that they are not the ones who are attending it. On top of that, the attendants believe that the target group of the course should effectively be the coastal manager. A couple of questions come up to our minds: where are they? How do they learn what they are supposed to do?

3.1.2. Course contents

The students presented different opinions about the level of contents, including the four major areas of knowledge. However, none considered the course as "basic". All of them considered it from medium to advanced level.

The knowledge about *basic concepts* related to the ICZM was graded by all the attendants as *medium* level, with outstanding *advanced* valuations for on specific topic about "sea–land integration" aspect. The website review pointed out a great amount of information about such aspects in a general perspective, however, disparities among the amount of information about each aspect was realized.

The knowledge related to *geographic focused information* seems to provide higher level information if compared to the previous aspect and it was valuated by most of the attendants as *medium* and a smaller number considered it *advanced*. The review of these contents showed a good coverage on the topic through case studies, which in spite of its geographical range limitation, presents several sources such as links and experts' contacts.

About the "level of management", the students considered that a larger amount of *advanced* knowledge was delivered in comparison with the two previous aspects. About this aspect, a smaller number of attendants now considered the knowledge delivered as *medium* and a larger number considered it *advanced*. On this topic the "case studies" figured as an important aspect, receiving most of the valuations as advanced. This high valuation regarding the case studies may be related to the fact that they present local successful examples of ICZM implementation.

According to most of the attendants interviewed, the case studies show possible solutions and aggregate theoretical concepts allowing the implementation of such solutions anywhere else, while some of them believe that the case studies are limited only to analyzing the problems, not going further on the solutions.

It was pointed out, again, that the case studies still present a limited geographical range, not covering each issue for all possible regions, although that is an expected limitation since web-based courses are available for a wide range of countries. The regionalization must be conducted by the attendant using the case studies as successful examples and may be, considering local singularities, adapted and reproduced in other areas. It is noteworthy that this process would be improved through the support of an online tutor. In addition to that, the development of local studies provides the attendants with an important opportunity to measure the applicability of the knowledge obtained and contributes, also, to the improvement of the course. It represents a "win–win" situation.

The attendants evaluated the "ICZM stages" topic as the previous one, where most of them considered it *medium* and some considered *advanced* level. Since the ICZM stages are the core of the process and a relative limited number of participants might have previous knowledge about the subject, that evaluation could be expected from ordinary (and frequently unprepared) coastal managers. However, considering that the attendants' background on environmental sciences should provide the basis of the environmental management, the results were rather surprising. These results point out how limited the study of such subject in graduation courses is. The improvement, or even the introduction of the ICZM subject in graduation courses seems to be necessary and inevitable.

Closing the attendants' analysis about the course contents, most of them evaluated the universal level of the course as *medium*, while some considered it *advanced* (Table 3). It is remarkable that even for a public with a strong background in environmental sciences the course presented high-level information, since none of them considered it as a *basic* level course. It serves as an aware sign to the developers of ICZM courses. Once these concepts would be considered by unprepared coastal managers as extremely complex, it won't take the attendant to the *stretching zone*, but straight to the *panic zone* where the learning process is blocked. Without supervision, it becomes impossible to change attendants' paradigms.

Table 3
"Level" of whole CoastLearn according to the students

	Basic	Medium	Advanced
Concepts	0	5	0
Geographic focus	0	4	1
Level of management	0	3	2
Stages of ICZM	0	3	2
Overview of the COURSE	0	3	2

3.1.3. Course characteristics and methodology

First of all, it is imperative to remember that CoastLearn is intended to be an introductory course to the ICZM subject, and not to cover all the aspects related to the ICZM. The coordinator of CoastLearn believes that the short courses are enough to strictly introduce some concepts and "get acquainted with some processes and management options". Most of the attendants agreed, considering that the course didn't fully provide the information to become a coastal manager, but it contributed to their professional carriers and fulfilled their expectations, corroborating the coordinator's opinion. To provide the knowledge needed is important and in addition to it, the time that the attendant will spend involved with the subject must be taken into account.

According to the attendants, the ICZM education should be brought about during the undergraduate course and continued in the post-graduate course, in addition to complements given through capacity building courses. That attitude would, primarily, benefit from the fact that the students, during the undergraduate course, show more willingness to go through the *stretching zone*. Secondly, it would avoid the *Eureka* feeling where the attendant only finds out vital knowledge related to his/her field of work after the undergraduate course, instead of using such moment to improve it.

In fact, the course seems to be reaching its objective. Nevertheless, one significant factor pointed out by the students and also realized during the website review, was the unbalance between the contents about different subjects. This characteristic might be misunderstood and distorted by the attendants while implementing the ICZM in their own regions. The risk is that they could consider this disequilibrium as the predominant rule on the ICZM, creating a critical mass multiplying exactly what the ICZM does not propose: inequity and unbalance. Such misunderstandings can be sorted out through communication with tutors and also lifelong learning. The coordination of the course has already pointed out the necessity of online tutors and that some kind of help for the attendants during the learning process would be extremely useful.

The interviewed attendants agreed with that and, in a general manner, considered the course "SMART": providing Specific details with Meaningful information fitting Appropriately the purpose of the course, using a Realistic approach and presenting Testable results. The only discrepancy about this evaluation was observed with its testability characteristic, that some attendants considered limited (Table 4). It is, in fact, an expected response due to the fact that short courses present a significant amount of information in a relatively short time [11].

Courses, in general, seem to need an increase in the linkage between concepts and real successful case studies elucidating the applicability and efficiency of the concepts and methods delivered. On top of that, the attendant should keep testing hypothetical solutions to his/her own area based on the new know-how obtained. Once more, the contribution of online tutors would be essential. The integration between practice and theory is crucial.

As previously stated and pointed out by several authors, the *integration* must be the focus of ICZM and the holistic approach should be sought by courses on this subject. The interviewed attendants considered that the course is in the middle of the way between serialist and holistic (Table 5). This intriguing result, which is interesting and alarming at the same time, is probably the consequence of the unbalanced provision of information about each subject, or even to the non-linearity and lack of a higher framework ruling the knowledge provided. The disconnection of an ICZM framework was pointed out during the comparison of the course contents with the ENCORA [18] framework proposal.

In a certain way, that result is interesting because it represents exactly the challenge faced by the transitional science nowadays: skip from a serialist to a holistic approach, using, very often, serialist tools. On the other hand, it is alarming because providing such mixed courses may lead attendants in misunderstanding their role in the ICZM process and the whole progress itself, creating an ambiguity: "to integrate or not to integrate? That's the question!"

The paradigmatic change depends on continuous learning and, according to the attendants and the coordinator of the course, the lifelong learning method seems to be the most appropriate for the ICZM subject. "On the job" activities and short courses, in addition to projects integrating short-term efforts and long-term goals should be always supported when following the ICZM framework, integrating the complexity of the coastal zone on the decisions about coastal issues. It is also noteworthy that nowadays most of the countries present unprepared staff performing the ICZM and there is a need of training programs to reach the personnel "in charge" of the ICZM in order to help to develop the minimum knowledge. It is important to theorize about ideal situations, however, pragmatic solutions are needed.

Normally, capacity building efforts are developed by the technical and scientific society, and according to Vallejo [22] it rarely captures the totality of the ICZM process. That's why the integration of many capacity building efforts and managerial tools is important. For example, the CoastLearn presents its own limitations and it is not intended to cover the totality of the coastal issues, like several other capacity building efforts in a worldwide perspective. However, it is possible, and needed, to develop a network that has the potential to provide the total knowledge asked from coastal managers, through different methodologies and based on the reflection of coastal educators, in addition to an open willingness to share experiences and educational practices. Reducing the limitations of each method is an important manner to improve the ICZM capacity building.

The limitation of peer-to-peer learning appears as an intrinsic limitation of the e-learning method. And, as answered by the interviewed attendants, to meet peers during the learning is very important to exchange experiences. In addition to it, most of them believe that the e-learning, as a method itself, is limited to fulfill the knowledge needed by coastal managers. CoastLearn tries to reduce such limitation through the Compas game, an interactive game where the attendant can test his/her knowledge about ICZM techniques.

The development of discussion forums, where it is possible to share and publish experiences, is a powerful tool to improve the peer-to-peer education through e-learning and provides an exchange experience desired by the students and normally absent

Table 4
The "SMART" evaluation for CoastLearn done by the students of the course

Buldioski et al. (2002) [11]	Strongly Agree	Agree	Disagree	Strongly Disagree
Specific – detail about particular aspects of expectations.	0	4	0	0
Meaningful – in language that is understandable to trainers & trainees.	1	4	0	0
Appropriate – 'fit for purpose'- suit learners and satisfy standards.	0	5	0	0
Realistic – given time constraints, resources etc.	0	5	0	0
Testable – some measure of progress/achievement of them can be made.	0	3	2	0
Rate	*0.05*	*0.85*	*0.1*	*0.00*

Table 5
Characteristics of serialist, in the left side, and holistic, in the right side, as proposed by Le Tissier et al. [20]

To which characteristic the methodology of the course is suitable? Le Tissier et al. (2003)				
Step-by-step approach	2	1	2	Get overall picture
Aided by rules and algorithms	0	3	3	Global learning
Lack of awareness as to 'why' and 'how'	1	2	2	See relationship
Follow procedures	1	4	0	Make intuitive jumps to conclusions
Serialist	*0.2*	*0.5*	*0.35*	*Holistic*

in web-based courses. The development of such forums, in addition to tutors' supervision, might improve the possibilities of one attendant to reach his/her *stretching zone*.

The last observation about CoastLearn characteristics is about the advertising and spreading method. As CoastLearn is a web-based course and necessarily needs the use of computers, it is mainly advertised through Internet, educational forums and congresses. This advertisement method seems to be appropriated for the CoastLearn methodology and geographical range. However, the decision of the advertising method must be selected meticulously when considering different geographical ranges, since computers and Internet are not yet a significantly spread media. Milne et al. [13] points out that in developing countries, even professionals in the field of marine protection do not include the Internet on their top three sources of information about coastal management issues.

3.1.4. Outcomes and multiplication factor

The outcomes and the multiplication of such knowledge must be measured to reevaluate the course, since its efficiency can be measured by how the capacity building is transformed into pragmatic management practices. The coordinator of CoastLearn points out that a method to track the process, after the attendant takes the course, is still missing. This task becomes even more difficult in CoastLearn's case, since the course has no registration sheets to access its contents. On one hand, it is positive, since no bureaucracy is required. On the other hand, the effectiveness of the course within the selected target group becomes immeasurable, in addition to the fact that the absence of bureaucracy shouldn't represent uncontrolled, and irresponsible, use of its material. It is important to maintain a feedback policy which allows the reevaluation and improvement of the course contents.

The subscription to the CoastLearn Newsletter is already an interesting network with a significant potential to provide the feedback needed to the course. It could be also considered as a tool to be implemented in other courses in a worldwide perspective.

Some interviewed attendants believe that the regionalization of the knowledge, yet limited because of the CoastLearn's geographical range, contributed significantly to planning activities and to their vision about the integrated approach. Furthermore, most of them believe that the course would be reproduced in their own countries since many good and bad examples are available. The more site-specific the courses are developed, the more efficient they turn out. With that, the efficiency and the multiplication of its knowledge become even easier.

The multiplication of its knowledge seems to be happening independently of the deficiency of a track mechanism. The attendants interviewed believe that they are multipliers of the knowledge obtained through the application of the concepts on their jobs, finding similar solutions to their regions, teaching the knowledge obtained and advertising the CoastLearn.

3.2. The positive and negative points of CoastLearn

3.2.1. Positive points

The multilingual, free of charge, flexible and non-bureaucratic access to the contents, which are characteristical of CoastLearn appear to be the top positive points of the course. The independence between modules was also pointed out as a positive aspect by some attendants.

Trying to solve an inherent difficulty of web-based methods as a whole, the CoastLearn developed Compas. It is a simulation "game" that creates scenarios depending on the managerial choices selected by the attendant. It is an extremely user-friendly tool that underlies several complex ICZM studies. It is exactly the tool needed to make coastal managers aware of the importance of ICZM and its correct and appropriate implementation.

In addition to these positive characteristics, CoastLearn appears to be used as a complementary tool to the ICZM education on a higher level. Its multi-use flexibility must be also considered as a significant positive feature.

On top of that, it is remarkable that CoastLearn is a successful example of integration between Science, Politics and NGOs. This kind of cooperation where science works based on the needs of politicians driven by problems of society must be sought by any project that searches for effective integration and sustainability.

3.2.2. Negative points

The inconsistent and unbalanced structure, the lack of update and the disconnection of its contents from a broader ICZM framework seems to be the negative points related to the contents of the CoastLearn.

In spite of the subscription process to the CoastLearn Newsletter, which already presents a networking potential, there are no online forums, tutors or peer experience exchange. On top of that, the feedback is very limited, since no subscription whatsoever is requested from the attendants and the reevaluation of the educational effectiveness is not being conducted.

The reevaluation must be conducted since the research pointed out that the attendants already believe that the knowledge provided, which is situated in the middle of the way between serialist and holistic, has a medium to advanced level.

3.3. Lessons learnt

Three are the main topics about the lessons learnt with CostLearn. The first of them is related to the attendants, the second to the structure of e-learning courses and the third to the ICZM itself.

Related to the attendants, it was possible to realize that courses in graduation level with environmental background are not providing enough, or any, information about ICZM. Most of them found out about ICZM during the CoastLearn course. Due to that, the knowledge provided by the course was already considered significantly complex by the attendants. So the knowledge must be periodically reevaluated.

Regarding the structure of the e-learning courses, the attendants believe that the association of e-leaning techniques with in situ examples and peer experience exchange would fulfill their needs. Limitations to the e-learning method exist. However, through the development of alternative tools (e.g., Compas) such limitations may be reduced.

The lack of tutors and feedback causes the education to go towards an unknown direction, where, on one hand, the attendants are not sure about what they've learnt and, on the other, the

coordinators do not know to whom they are teaching and how efficient it is. Tutors and feedback seem to be imperative to successful future initiatives.

The attendants' empowerment, as another alternative tool, provides a secondary benefit that is the improvement of the course through the creation of platforms and forums, increasing the peer experience exchange and improving the course itself.

And the main lesson learnt related to the ICZM itself is the fact that an effective and real integration is possible. CoastLearn is a successful example where society is benefited by science applied to, and based on, political needs.

4. Conclusions and recommendations

4.1. Conclusions

The CoastLearn seems to be fulfilling its objective, offering the introductory knowledge and material about the ICZM. The course presents from medium to advanced level knowledge and the Integrated Coastal Zone Management is considered a lifelong learning process about local, regional, national and international issues.

The CoastLearn is being used also as a complementary ICZM teaching tool, and that aggregates an interesting characteristic to its features that should be sought by future courses about ICZM. In addition, the introduction of the ICZM subject in undergraduate courses is vital to create a critical mass, able to develop such activity, using capacity building and post-graduate courses to improve their knowledge and share experiences, rather than discovering the Integrated Coastal Zone Management at that level.

Many improvements are needed and the critical ones are:

- the review of the contents, aiming at the balance and linkage of the knowledge provided;
- implementation of a feedback policy, also with users' registration;
- availability of online tutors;
- empowerment of the attendants through forums, platforms and peer experience exchange.

It must be mentioned that providing knowledge is as important as tracking to what extent that knowledge is becoming capacity utilization and enhancement.

4.2. Recommendations

The recommendations are based on the results of the present survey, which is the product of an extensive review of several studies dating from the 90s until the present moment. These recommendations are addressed to current and future capacity building efforts, aiming at the improvement of such courses, providing information based on previous successful and ineffective cases. It is not limited only to e-learning initiatives but extends to other ICZM educational methods.

During the development of the course, the knowledge to be provided must consider a higher framework needed by a coastal manager (e.g., ENCORA, 2006). The contents must be balanced and looking for the maintenance of the equilibrium between theory and practice.

Also important are the target group needs, which must be defined through stakeholder analysis and dialogue. However, it is also important to bear in mind that a unique curriculum for ICZM courses is practically unfeasible, due to the multidisciplinary approach required and the variations on regional and local issues.

In addition to that, the method must be selected following some well-defined criteria. Since the Internet and the computer are not a widespread media yet, other methods may be selected.

Mechanisms to identify the attendants must be considered and created. Face-to-face courses may not be a significant issue, but to e-learning it is a crucial concern. That procedure would allow evaluating if the target group is being reached and it also permits the implementation of a feedback policy, aiming at systematically improving the course.

During the attending period, but not limited to it, the development of open communication channels such as forums and platforms, with tutors and other attendants of the course, should be encouraged since interaction is the basis for integration.

The continuous reevaluation of the course contents is necessary to provide the knowledge effectively needed by the attendants. Considering that the attendant *per se* is the best source of such information, they must take part, when necessary, on the refocus of the course.

After the attendance, it is vital to analyze the efficiency of the course. That becomes possible through the amount of the capacity built that was transformed into pragmatic managerial activities, projects and programs. The course must care about its effective results to create coastal managers who are able to support the coastal sustainability and its influence on society.

A mechanism to spread or multiply the knowledge provided by the course in the attendants' own countries is also necessary. That is the only mechanism to create a critical mass able to manage the coastal zone in an integrative manner.

Some of the previous recommendations present options regarding strictly the optimization of the structure already available, thus not representing significant investments but meaning significant improvements in its efficiency.

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