sustainability

MDPI

Article

Applied Model of E-Learning in the Framework of Education for Sustainable Development

Tong Zhang [1], Zaffar A. Shaikh [2], Alexei V. Yumashev [3] and Monika Chłąd [4,*]

1 International Business School, Qingdao Huanghai University, Qingdao 266555, China; 196666lele@163.com
2 Department of Computer Science & Information Technology, Benazir Bhutto Shaheed University, Lyari, Karachi 75660, Pakistan; zashaikh@bbsul.edu.pk
3 Department of Prosthetic Dentistry, I.M. Sechenov First Moscow State Medical University (Sechenov University), 119991 Moscow, Russia; umalex99@gmail.com
4 Faculty of Management, Czestochowa University of Technology, J.H. Dąbrowskigo 69, 42-201 Częstochowa, Poland
* Correspondence: monika.chlad@wz.pcz.pl

Received: 8 July 2020; Accepted: 7 August 2020; Published: 10 August 2020

Abstract: Education for sustainable development is an evolving concept aimed at providing an understanding of the relationship between sustainable development issues and the development of knowledge, skills, perspectives and values, which will enable people of all ages to commit themselves to creating a sustainable future. The aim of the study is the development of a widely applicable model of e-learning, which consists of seven consecutive levels of professional and personal development and is conceptually associated with a self-regulation strategy. The methodological core of such model creation is the theory of niche construction. Its application to the understanding of the systemic educational process allowed the assumption that, under the evolutionary pressure of the educational environment, a person is engaged in self-learning and self-development processes. Thus, needing to adapt to the educational niche's interaction, the individual affects its development through active inclusion in the training process, showing a personal evolutionary impulse. The system, in turn, affects one's individual growth through the socialization of his/her personal and professional qualities. The scientific novelty of this article lies in the proposed widely applicable, presumably universal model of distance education, which consists of seven levels of professional development. The results show progress in students' mastery of skills, which are an integral part of education for sustainable development (ESD), namely, foresight, critical thinking and reflection, systemic thinking, building partnerships, and participating in decision-making. This article also demonstrates the existing functionality of platforms that technologically support the educational process, indicates their strengths and defines areas for further improvement and development within the framework regarding the concept of education for sustainable development. The study outcomes confirm the effectiveness of a universal distance education model for the stable professional growth of tourism and hospitality staff. Thus, it is advisable to implement the model's conceptual structure into educational programs of modern e-learning systems. Supposed universality of the model opens up the possibility of its use in almost all fields for training personnel.

Keywords: e-learning; education for sustainable development; sustainable skills; self-regulation strategy

1. Introduction

The 2030 United Nations Agenda offers a new comprehensive path towards sustainability, where the Sustainable Development Goals (SDGs) open a door to equality, justice and prosperity while taking social, environmental and economic well-being into account [1]. Particular attention is paid to

education as a tool to achieve SDGs [2]. The concept of sustainable development strongly emphasizes the principle of participation, i.e., socialization. It assumes that the planning and decision-making process must enable effective citizen participation. Transparency of decisions made and social commitment are key to improving planning processes for sustainable development. The significance of this rule results from the following premises [3]:

1. Development (including valuable natural areas) concerns ecological, socio-cultural, economic, institutional and spatial conditions for satisfying people's needs;
2. Society must be able to articulate them and influence their inclusion in development plans;
3. Sustainable development is to a large extent a normative concept, and in the world of civil liberties, arbitrary imposition of the concept of development based on specific values should not take place;
4. The diversity of individual or group interests means that there are no universal criteria for assessing development diversity—thus, procedures are needed to learn about particular criteria and lead to transparent decisions regarding trade-offs and compromises;
5. Sustainable development must take into account local and regional conditions;
6. Therefore, including the community in planning processes allows the use of information and knowledge resources not available in a closed planning process.

Under conditions of sustainable development as the normative basis of policy, a participatory approach in decision-making is key to the definition and implementation of all actions [4]. Most interpretations of sustainable development assume such a nature of the decision-making process. In the planning process, participation is considered a sine qua non condition for adopting the strategy as meeting the requirements of sustainable development. Specifically, SDG 4 aims to 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all', which is directly implemented through the development and improvement of e-learning effectiveness [1]. Furthermore, the Incheon Declaration was approved at the World Education Forum in 2015 [5], which set out provisions for coordinating, financing and monitoring the implementation of the program at the global, regional and national levels for the next 15 years.

There are barriers to the successful implementation of SDGs (primarily educational initiatives) that originate from non-equal capabilities of poor and rich countries and their socio-cultural and economic differences [6]. This requires a common set of development indicators to integrate national educational programs with the concept of sustainable development and rank countries while taking their socio-cultural characteristics into account.

To meet education-related SDGs, SDG 4 specifically, ISO developed ISO 21001, the first ever management system standard on education, which aims at improving the quality of educational services and satisfy the needs of those who use them [7]. Furthermore, ISO/TC 232 develops standards that describe the requirements for learning services provided outside formal education such as ISO 29993, which covers all types of lifelong learning, including vocational education and in-company training. In total, ISO developed 133 standards contributing to more effective achievement of SDG 4.

In 2018, the World Bank Group launched a Human Capital Project [8], a global initiative designed to accelerate more and better investments in people for sustainable intellectual development of society. As part of the project, the bank aims to improve learning outcomes and professional skills of people in order to ensure their readiness for work. Together with the World Bank Group, over 60 countries are working to radically improve their human capital ratios, which will directly affect the quality of life of humankind.

Modern society is on the verge of changing the technological paradigm. Information technologies are being replaced by smart technologies that open up new directions and prospects for the development of new, more sustainable interaction between people. Many universities have signed international declarations and have committed to integrate sustainability principles into their educational programs and research activities. However, despite the declaration of good intentions and political developments

at the national, regional and international levels, little has been achieved in terms of embedding education for sustainable development into a single curriculum [9].

Thus, there is a need to disclose the problematic in the context of the formation of universal mechanisms that, on the one hand, might describe the reality of electronic educational processes, and on the other hand, might correspond to the personnel requirements of the market. The novelty of this study is determined by the integration nature of the development, the importance of which is based on a direct positive impact on human capital and the innovative potential of a particular society, where the specified approach might be introduced into the educational ecosystem. This paper aims to develop an effective model of distance education for sustainable development based on advanced technological solutions and strategies for self-regulation in the online learning environments. The model was developed on the basis of the theory of niche construction, conceptual provisions for the implementation of SDGs in education, distance education guidelines and ISO standards. Thus, it was possible to save many components and at the same time group the elements into seven levels of professional development for the convenience of practical use of the model. The value of the model will be its supposed universality of application, which will allow for a long time to maintain the applied relevance of the developed tools. To achieve this goal, the following objectives were set:

1. Analyze the latest technological solutions in the education field;
2. Build a widely applicable model of distance education for sustainable development;
3. Embed the conceptual strategy for self-organization and self-regulation into the e-learning methodology;
4. Test the distance learning framework applied to the example of the Tourism and Hospitality Management course;
5. Analyze professional and personal experience acquired by Tourism and Hospitality Management course participants;
6. Conceptually confirm the effectiveness of the proposed methodology.

2. Literature Review

The development of human resources remains crucial for ensuring society's sustainability and national economies' evolution. In the 21st century, knowledge is among the main factors contributing to these goals' achievement. It is evidenced by the experience of leading economic systems that have invested significant resources in education, while creating an effective, competitive, and sustainable national economy [10]. The conditions of the modern global market confirm the thesis about the determining role of human capital in the economic well-being of society.

The study of human development is emerging into a new era of theory-predicated methodological innovation in research and application [11]. Human development occurs through the interconnection between individuals and their culture, with relationships as the key drivers affecting the quality of life. Relations and contexts, as well as their assessment and interpretation, can be assets for building effective educational programs [12]. The rising of sociality among humans may be explained by the occurrence of neurocognitive structures allowing people to learn about the outside world [13,14]. Education has ceased to be a closed system of limited access and requires conceptually new approaches to the construction of learning processes.

Along with the evolution of knowledge regarding human development and learning, the opportunity to shape more effective educational practices has also increased. However, taking advantage of these achievements requires integrating insights across multiple fields—from the biological and neurosciences to psychology, sociology, developmental and learning sciences—and connecting them to the knowledge of successful educational approaches and methods [15]. It was this task that largely determined the motivational rationale for this study.

In most developed countries, higher education is focused on the enhancement of professional competencies among young specialists of various professions [16]. Under the conditions of rapid knowledge expansion and dramatic changes in technology and workflows, the "21st-century skills"

require stable support and improvement. These abilities include critical thinking and problem-solving skills; the ability to find, analyze, synthesize and apply knowledge in new situations; interpersonal interaction providing effective communication and the capacity to participate in intercultural contexts; and independent work skills, that allow finding resources and using technological tools [17]. This makes the skills directly market-oriented. Education for the sake of education has lost its value. New educational concepts should reflect the needs of employers and transformational processes in society.

Digital transformation changes socio-economic interactions in the global dimension. New technical and "soft" skills are becoming increasingly important both in the labor market and as a means to ensure the quality of society. Rethinking education in the digital age is a central issue for management structures at all levels. An effective formation of a quality workforce is the key to the future global competitiveness of the countries. It can provide the preconditions for the social inclusion and equal participation of citizens in a digitalized democracy [18].

The digital era has an inherent power to affect the concept of social culture by introducing new technological structures that increase the chances for individuals and collective groups to participate in building up their own culture. Modern technologies create communicative bridges between individuals and strengthen all forms of interaction, facilitating the exchange of ideas and contributing to society's progress as a whole [19]. This creates a tool for influencing the welfare of individual societies, which in the long term also reduces global inequality. However, today, countries are predominantly pursuing mostly disaggregated practices that do not allow creating a synergistic effect. All this creates a request for widely applicable models that carry significant universality of implementation and use in the educational environment. Based on the practical experience gained by developed countries in higher education, it can be said that larger systems always have relatively independent quality assurance and audit support programs [20]. Thus, eliminating the influence of formalism and bureaucracy as well as establishing a credible third-party education quality assurance program are the central managerial intentions in modern universities' development strategies [21].

Global transformational processes in socio-economic life create the need to identify the following main vectors of the educational paradigm evolution, adaptive to modern socio-economic life, including the global society's demand for sustainability:

1. Introduction of innovative technologies in educational methods;
2. Socialization, systemic group interaction and development;
3. Stable improvement and acquisition of professional knowledge and skills;
4. Implementation of advanced experience in educational programs;
5. Harmony with the business environment and provision of quality feedback in the system of integrated development of labor resources in specific product segments.

It is these transformations that must permanently take into account modern education as a social institution. The educational process, consistent with the goals of sustainable development, is an interdisciplinary teaching methodology, covering the complex social, economic and environmental aspects of the formal and informal curriculum [22]. Such an academic approach allows students to disclose their knowledge, talents and experience in order to further become responsible members of society [23]. While technological development promotes greater interdependence and opens up new opportunities for exchange, cooperation and solidarity in society, there is also an increase in cultural and religious intolerance, political mobilization and conflicts due to the misuse of personal data [24]. Education should find ways to respond to such problems, taking into account multiple worldviews and alternative knowledge systems, as well as new achievements in science thanks to the development of digital technologies, including e-learning.

Education as a social system must quickly adapt to the social, environmental and economic changes of the modern world and, as a result, constantly evolve [25]. Therefore, education for sustainable development can be considered as the educational paradigm of the progressive development of the individual and society as a whole. The methodological basis of such a paradigm is the concept of

sustainable development, which defines the needs, opportunities and limitations necessary for the preservation and development of society [26]. Education as a mechanism for the formation of future civilization has a certain potential and capabilities based on the assimilation of special knowledge focused on ethics of responsibility.

E-learning (through the direct implementation of the concept of inclusiveness and equality) provides:

1. Unity of the educational process;
2. Optimal conditions for organizing the interaction of a teacher with students;
3. Systematic mastery by students of the content of the subject area;
4. Continuous mastery of the culture through the acquisition of the necessary subject knowledge and abilities [27].

Integration of the listed components into a single practical system will make it possible to create educational products that are competitive not only in local markets, but also in a global context. Education in the context of sustainable development concept sets new targets for the implementation of professional activities, the search for new educational content, innovative learning technologies. The latter should result in students' conceptual thinking and the opportunity to learn and solve problems, while critically analyzing various points of view. Education should ensure the development of individual consciousness, based on the creative knowledge of human culture, including the formation of value orientations, the development of abilities, and the formation of personal responsibility; that is, skills that allow a person to "sustainably" live in an ever-changing world. Thus, the formation of a widely applicable education model based on advanced technological solutions and self-regulation strategies in the online learning environment is reasoned both by social demand and by global conditions.

3. Materials and Methods

3.1. Research Design

The theory of niche construction created by Laland, Odling-Smee, and Feldman served as the methodological basis for the development of a distance education model [28]. The main point of this theory is that the organism adapts to a particular environment and forms a niche that allows it to exist comfortably. In this regard, a social communication system arises, which elements influence each other, thereby giving rise to changes in the entire system. The thorough analysis of the social communication system in the process of its development is of particular importance since, when building a niche, organisms transform the environment, which, in turn, affects their evolution. Such organisms are not only subjected to environmental pressure but also actively change the surrounding conditions [29], performing a kind of "ecosystem engineering" [30]. Hence, the organism and the environment are equalized as explanatory variables of evolution. During such co-evolving, an organism transforms the matrix of resources and transmits their own niche to other generations [31].

While applying the theory of niche construction to the understanding of the systemic educational process, it was suggested that the one engages in self-learning and self-development under the educational environment's evolutionary pressure. Consequently, forming the need to adapt to the educational niche, the person affects the niche's development through active inclusion in training. At the same time, the system influences the individual's personal growth through the socialization of his/her personal and professional qualities.

Based on the interweaving of ideas of social evolution and professional development, the research methodology was supplemented by a competent approach, actualizing the need for synchronous development of technical (hard) and behavioral (soft) competencies. The technical competencies represent relevant professional knowledge, skills, and abilities that people need to perform their jobs. The behavioral competencies represent cultural aspects of work and social habits as well as appropriate development of potential and personal aspirations that are required for successful professional activity and growth in the organization [32].

In the process of the study, the following hypotheses were formed:

Hypotheses 1. *External environment has a dominant role in the professional evolution of the individual.*

Hypotheses 2. *Development of professional knowledge and skills is ensured by adaptation to an environment with systemic interaction.*

Hypotheses 3. *Professional evolution logic is directed from the environment to individuals and vice versa.*

Hypotheses 4. *Professional evolution is an interactive process with a mutual causality, both from the side of the simulated educational ecosystem and from the perspective of the learning process participants.*

Hypotheses 5. *Educational ecosystem development should include the simultaneous formation of technological and behavioral competencies.*

Analyzing conceptual provisions and recommendations for the implementation of SDGs in education, distance education guidelines, and ISO standards, a universal model of distance education was developed, which includes seven levels of professional development:

Level A. Identifying macro- and micro-problems;
Level B. Studying causes and preconditions behind these problems;
Level C. Developing hard skills;
Level D. Developing verbal-speech skills;
Level E. Developing organizational skills;
Level F. Developing soft skills and professional vision;
Level G. Developing innovative thinking.

The distance learning framework proposed is a 6-month seven-level program that enables the acquisition of experience necessary for a successful career in a particular field. The knowledge is delivered in a group format where 20 to 100 participants gain practical experience and seek information to complete the task in the simulated context by aid of modern information resources and advanced smart technologies. Cohesive and interrelated tasks are given by a moderator via a 7 min instruction video and evaluated in a video conference format. The evaluation lasts not longer than 7 min. The distance learning framework is based on a project-based approach, meaning that each task has definite boundaries and evaluation criteria. Furthermore, learners are not permitted to move on to the next level of professional development if the current stage is not completed. Progress evaluation is performed prior and subsequently to each task is order to identify barriers to learning. Note that professional and personal development paths are integrated and take place through social interactions with other participants in the teaching and learning process, such as moderators, consultants, and mentors who communicate instructions and recommendations. All e-learning schedules are temporary decisions to address the needs of learners for convenient learning. The distance learning framework is designed for all ages and educational backgrounds. By the end of the training course, the learner is expected to establish a comprehensive business project that will be tested in a virtual business space. The education model under consideration provides for the consolidation of knowledge the learner acquires, personal and group progress analysis. Those who complete the course will receive a certificate at the end of the program that will meet the international standards for education. A universal model of distance learning is depicted in Figure 1.

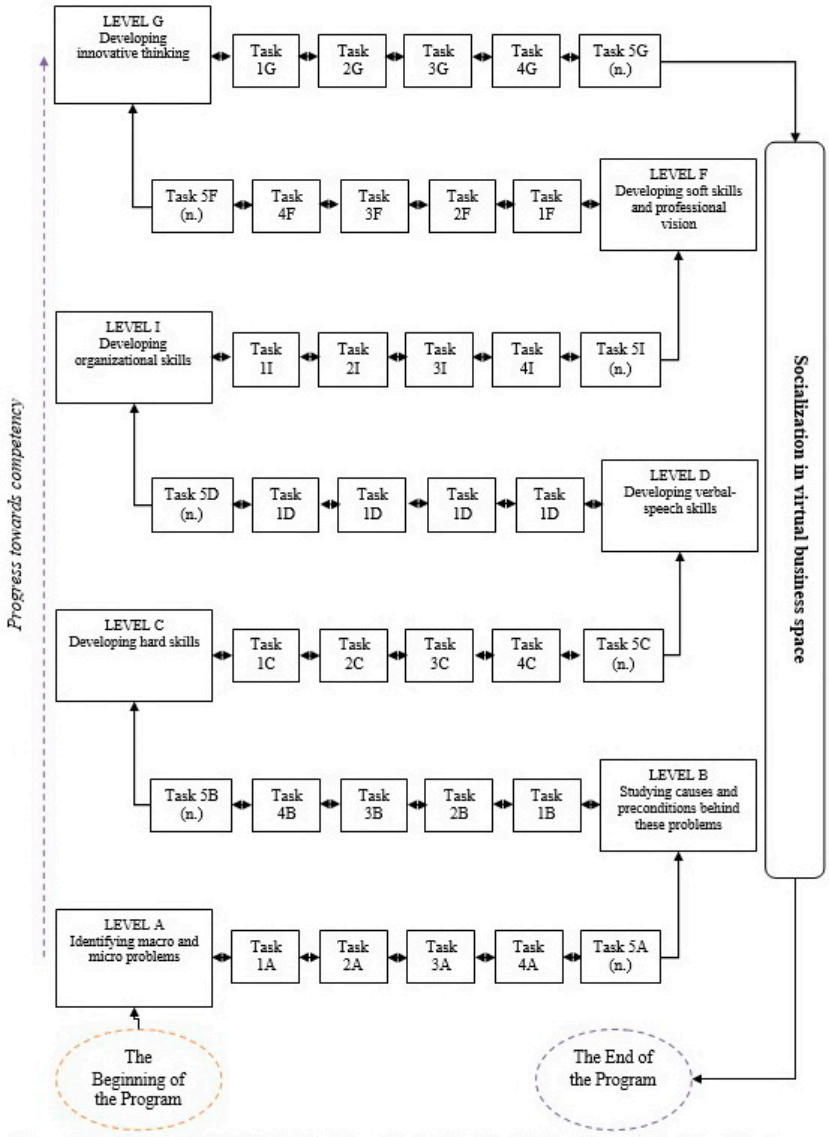

Figure 1. The universal model of online education for sustainable development, developed by the authors.

3.2. Research Population

In order to test the distance learning framework, the Tourism and Hospitality Management course program was developed with the LMS Moodle tools. The learning course began May 2019 and ended October 2019. Course participants were residents of Russia, Kazakhstan and China (47 women and 44 men, aged in the range from 21 to 56 years). Learners were divided in two groups, one with employees in tourism and hospitality, and second with students majoring in tourism. The employee group consisted of 44 learners, employed in restaurant and hotel business, tour operators and the travel industry, the insurance sector, retail, and in the spa and recreation industry (Table 1). The student group included 46 students from the Kazakh Academy of Sport and Tourism, the Almaty University (Kazakhstan), the Russian State University of Tourism and Service (Russia), and from the Hong Kong Polytechnic University's School of Hotel and Tourism Management (China). Students were majoring in restaurant and hotel business, tourism, hotel business, hotel and tourism management, global hospitality business, international hospitality management, tourism and events management (Table 2).

Table 1. Research population—employees in tourism and hospitality.

Quantity of Course Participant	Age	Sex	Education	Employer
Russian Federation				
15	25–56	7—female 8—male	Degree in Economics (4) Degree in Teacher Education (4) Degree in Banking and Finance (1) Degree in Medicine (1) Degree in Law (2) High School (3)	Restaurant Business (1) Tour Operators and Travel Industry (3) Retail Industry (3) Insurance Industry (1) Tourist Excursion and Entertainment Industry (5) Spa and Recreation Industry (1) Transportation Industry (1)
Kazakhstan				
15	26–55	6—female 9—male	Degree in Economics (2) Degree in Teacher Education (3) Degree in Banking and Finance (3) Degree in Medicine (2) Degree in Law (2) High School (3)	Hotel Business (1) Restaurant Business (2) Tour Operators and Travel Industry (3) Retail Industry (3) Insurance Industry (4) Tourist Excursion and Entertainment Industry (1) Spa and Recreation Industry (1)
China				
14	28–47	8—female 7—male	Degree in Economics (4) Degree in Teacher Education (2) Degree in Banking and Finance (1) Degree in Law (2) High School (4) Complete Secondary Education (1)	Hotel Business (3) Restaurant Business (3) Tour Operators and Travel Industry (1) Retail Industry (2) Insurance Industry (1) Tourist Excursion and Entertainment Industry (3) Transportation Industry (1)

Table 2. Research population—majors in tourism and hospitality.

Course Participant	Age	Sex	Major
Russian State University of Tourism and Service (Russian Federation)			
10	22–28	5—female 5—male	Hotel Business
Kazakh Academy of Sport and Tourism (Kazakhstan)			
15	23–27	9—female 6—male	Restaurant and Hotel Business (5) Tourism (10)
Hong Kong Polytechnic University's School of Hotel and Tourism Management (China)			
21	21–26	13—female 8—male	Hotel and Tourism Management (5) Global Hospitality Business (4) International Hospitality Management (12)

4. Results

By systematizing the findings on the importance of self-regulatory learning strategies as well as recommendations for their implementation, a conceptual self-regulation strategy was developed, which complements the widely applicable e-learning model, consistent with sustainable development goals (Figure 2). In order to achieve better learning, it is necessary to build an organizational model of a steady learning progress and adapt it to the given academic course. By integrating professional and personal development paths, the course program enables stronger engagement and facilitates progress through the seven levels of professional development [33].

To help learners reach strong self-regulation, each stage of learning within the model offers two personal development paths that exist in parallel to each other, one guided by social interactions and another implying the immersion into the practical context and the work with the task organizer. The self-regulation strategy involves the following:

Level A. Awakening interest in business processes and developing a comprehensive understanding of the business sphere;

Level B. Provoking personal involvement in learning and business interactions;
Level C. Shaping an intention to gain profession-related mastery;
Level D. Provoking professional involvement and forming constructive associations with the profession;
Level E. Shaping intentions for self-improvement;
Level F. Developing a consistent vision for professional processes and a consistent approach towards professional actions;
Level G. Making the innovative mindset flexible and ensuring the balance between creative and rational thinking.

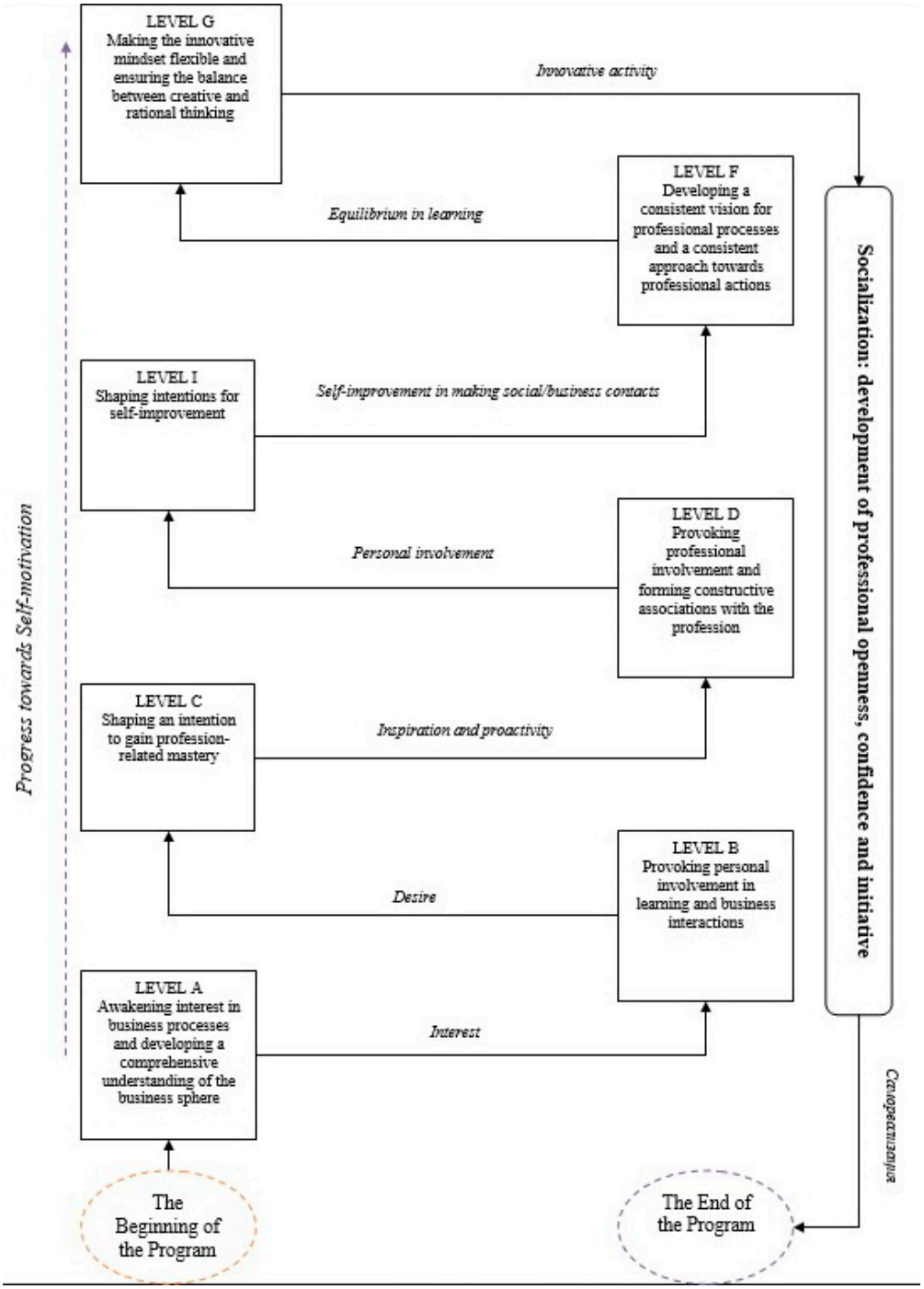

Figure 2. The self-regulated e-learning strategy developed by the authors.

The progress towards being motivated to learn is a six-stage process, which involves sparking the interest, transitioning from interest to desire, getting inspired and proactive, self-improvement in making social/business contact, reaching equilibrium in learning, and producing innovative outcomes. In order to ensure consolidation of experience, the socialization program was integrated, aimed at developing professional openness, confidence and initiative through social interactions. The learner could act as a moderator, consultant or mentor, and participate in role-playing within the virtual business environment. At the end of the program, the learner received an opportunity to implement their newly acquired competencies in order to shape objective self-esteem (Figure 2).

The learners' progress in self-evaluation revealed a range of specific professional and personal achievements at each model stage in the example of the Tourism and Hospitality Management course (Figure 3).

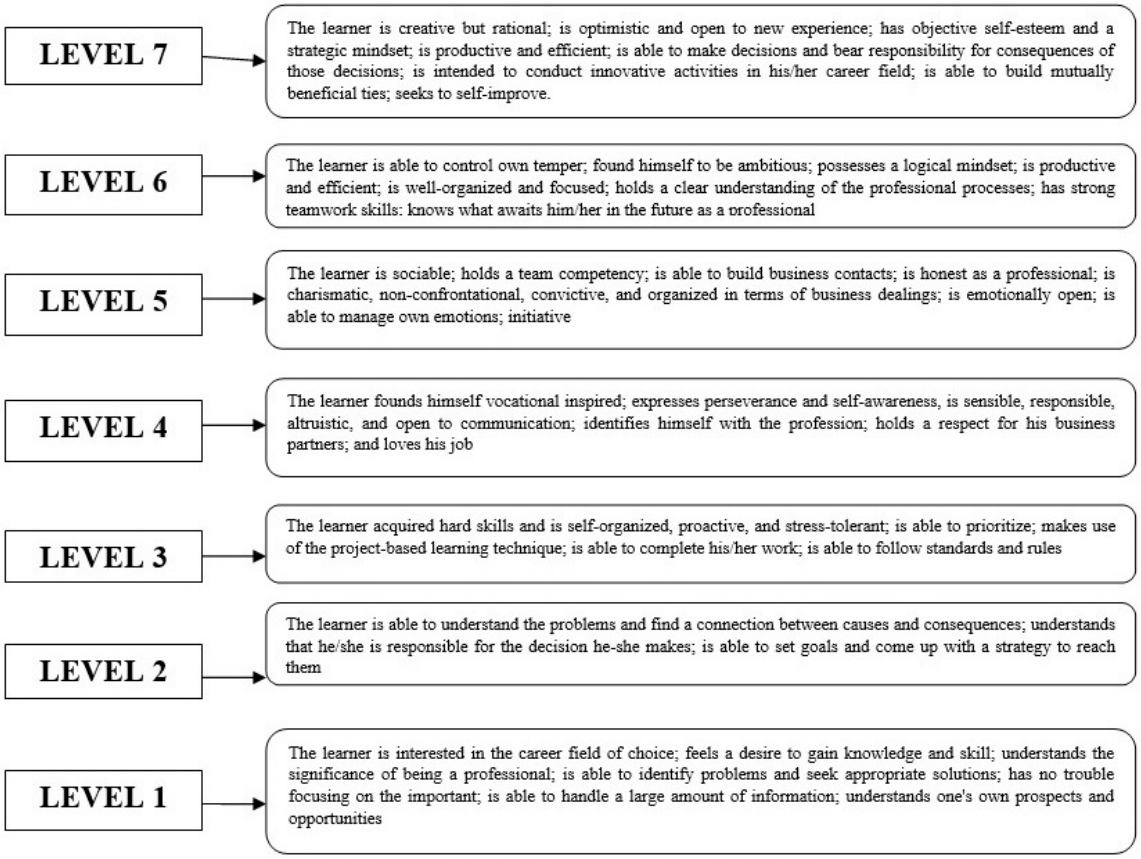

Figure 3. The findings of learners' progress in self-evaluation: the qualities and competencies acquired with the proposed distance education model.

Based on the course results, an analysis of the learning outcomes according to the hard skills/soft skills development criteria was made (Table 3). After that, the students' progress in achieving educational goals was reviewed. Moreover, the self-assessment results of participants' professional growth for each level of the educational course were examined (Table 4).

Table 3. Results of the education course.

Students	Hard Skills	Soft Skills	Progress
	(0–100)	(0–100)	(0–10)
Employees in Tourism and Hospitality (44)	83	89	9
Majors in Tourism and Hospitality (46)	80	81	8

Table 4. Self-assessment of participants' professional growth for each level of the course.

Level	Scores/Number of Participants			
	60–74	**74–84**	**95–90**	**90–100**
Level A. Identifying macro and micro problems	38	23	13	16
Level B. Studying causes and preconditions behind these problems	26	31	14	19
Level C. Developing hard skills	21	23	36	10
Level D. Developing verbal-speech skills	15	34	31	10
Level I. Developing organizational skills	12	29	37	12
Level F. Developing soft skills and professional vision	8	30	36	16
Level G. Developing innovative thinking	6	29	41	14

Thus, through the implementation of the proposed model of e-learning, students develop and improve skills, which are an integral part of education for sustainable development (ESD), namely:

- Foresight—being able to imagine a better future; a person knows how he/she wants to develop him/herself and the world around him/her.
- Critical thinking and reflection—objectivity in identifying the nature of phenomena and processes; the adequacy of assessing the structural elements of systems.
- Systemic thinking—recognition of the complexity of relationships and interaction to formulate solutions to problems.
- Building partnerships—developing dialogue and negotiation skills related to working together.
- Participation in decision-making—empowering people.

5. Discussion

Education for sustainable development is considered within the United Nations as a conceptual approach that includes aggregate components [34] such as the following:

1. Education that gives students the opportunity to acquire the skills, ability to act, perceptions and knowledge necessary to ensure sustainable development.
2. Education at all public levels (family, school, workplace, team, etc.).
3. Education with the aim of forming socially responsible citizens and strengthening democracy, in which individual citizens or their associations exercise their rights, while fulfilling their civic responsibilities.
4. Lifelong learning.
5. Education aimed at the harmonious development of personality.

All of these components can be harmoniously integrated within e-learning programs. However, the technological component that directly affects the form and content of the educational process remains an important element in the practical implementation of the proposed model of e-education. Thus, it is extremely important to take into account practical functionality of existing programs and platforms through which the proposed model of sustainable e-learning can be implemented in practice.

E-learning platform designers give due attention to the opportunities of acquiring global organizational competencies and skills. For instance, eLDA [35] is a platform that allows learners to set their own learning paths and is based on a hybrid approach. FORGE tool is used to complement course evaluation activities with interactive laboratories [36], and is aimed more towards blended learning courses. MyLearningMentor is a mobile application that supports the planning of weekly activities [37]. The Serious Game features an educational game to support evaluation activities [38]. Video-Mapper allows learners to take notes, as well as create and share videos segments [39]. Learning Tracker, a widget edX, allows learners to monitor their learning process and compare their performance against that of learners who completed the course in previous editions [40].

NoteMyProgress is a tool designed to support self-regulatory learning strategies [41]. These Web applications support the following strategies of self-regulation and elements of education for sustainable development:

1. Goal setting. Learning tracker allows learners to monitor their progress in relation to the weekly goals set in the course, although the learner does not have the possibility of setting their own goals. eLDA allows learners to set their own learning paths, selecting the study material. FORGE allows learners to set their goals by selecting their own learning resources and programs. MyLearningMentor proposes an interface for learners to set their own goals for each week.
2. Self-evaluation. FORGE and The Serious Game allow learners to view an assessment of their acquired knowledge by carrying out course evaluation activities. Learning Tracker and eLDA offer visualizations of learner progress throughout the course.
3. Help-seeking. eLDA, Video-Mapper and MyLearningMentor include a chat in which classmates can exchange ideas and find solutions needed in further learning. Furthermore, eLDA and Video-Mapper have discussion forums.
4. Self-motivation. FORGE and The Serious Game support self-motivation through interactive activities (laboratories, interactive evaluations), whereas eLDA allows learners to choose the most relevant material.
5. Strategic management. MyLearningMentor allows learners to plan and see the estimated workload, whereas eLDA allows learners to define their own learning path.
6. Self-awareness. The Serious Game simulates a real context during the evaluation. Learning Tracker offers learners visualizations, so they can view and monitor their progress in the course.
7. Organization. Video-Mapper supports organization by offering learners the option of taking notes on video lectures.

Having technological solutions, however, is not enough because better learning requires a well-organized learning path that is adapted to the requirements of the academic course and integrates professional and personal development [42]. Thus, there is a further need to develop managerial tools to implement conceptual models of e-education (including those proposed in the study). The latter, in the "routine", daily implementation, will also correspond to the ideas of education for sustainable development as a developing concept. Such a concept implies the relationship between sustainable development and the development of knowledge, skills, perspectives and values, which will enable people of any age to commit themselves to creating a sustainable future.

6. Conclusions

Education for sustainable development today is seen as a new direction of education and training for all, which can be implemented using applied models of e-learning. Through a systematic and integrated approach, education for sustainable development contributes to the creation of a flexible, healthy and sustainable society, and introduces new foundations, quality, value and goals into the education and training system. It is based on values such as justice, equality, tolerance, sufficiency and responsibility, and on principles and methods that are necessary to effectively respond to existing and emerging challenges. Education for sustainable development is associated with different needs and specific living conditions of people and provides the skills necessary to solve problems, using methods and knowledge inherent in local traditional cultures, as well as new ideas and technologies. Education for sustainable development pays special attention to the formation of creative and critical approaches, perspective and innovative thinking, as well as expanding opportunities for action in conditions of uncertainty and for solving complex problems.

The study offers a widely applicable model of distance education for sustainable development that is based on the use of smart technologies and self-regulatory learning strategy. The findings of learners' progress in self-evaluation suggest that the learning success was achieved owning to the optimized level-based structure of the learning content; a strong learner involvement; the game-based group

format of content delivery; focus on the practical competencies; a flexible approach to social interaction; personalized guidance; user-friendliness of advanced technologies; and the progress-centered approach. Considering that all learners completed the course, the self-regulation strategy that was applied is presumably effective. Yet, the model of self-regulated e-learning needs to be improved to cover a systematized range of digital tools and fit a specially created online platform that is independent and self-sufficient.

6.1. Limitations

Although the current proposal is deemed widely applicable and generally universal, the conceptual essence of the model and its effects that were examined in this study are limited to one academic course.

6.2. Recommendations

This study's findings proved the effectiveness of a universal distance education model for the stable professional development of tourism and hospitality staff. In this regard, the model's conceptual structure can be successfully implemented into modern e-learning courses as a methodology for balanced personal growth. What is more, the model's flexibility allows its application in almost all areas of personnel training.

Author Contributions: Conceptualization, T.Z. and A.V.Y.; methodology, Z.A.S.; software, T.Z.; validation, T.Z., Z.A.S. and A.V.Y.; formal analysis, A.V.Y., M.C.; investigation, Z.A.S.; resources, T.Z.; data curation, A.V.Y.; writing—original draft preparation, Z.A.S.; writing—review and editing, T.Z.; visualization, A.V.Y.; supervision, Z.A.S.; project administration, T.Z.; funding acquisition, A.V.Y. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Acknowledgments: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. United Nations. Transforming Our World: The 2030 Agenda for Sustainable Development. 2015. Available online: https://sustainabledevelopment.un.org/post2015/transformingourworld (accessed on 15 February 2020).
2. Vekic, A.; Djakovic, V.; Borocki, J.; Sroka, W.; Popp, J.; Olàh, J. The importance of academic new ventures for sustainable regional development. *Am. Econ.* **2020**, *22*, 533–550.
3. Rokicka, E.; Woźniak, W. Towards sustainable development. In *Concepts, Interpretations, Contexts*; Faculty of Economics and Sociology, University of Łódź: Lodz, Poland, 2016; pp. 232–233.
4. Dobrzański, G.; Dobrzańska, B.M. Trwały I Zrównoważony Rozwój. In *Ochrona Środowiska Przyrodniczego*; Dobrzańska, G., Dobrzański, G., Kiełczewski, D., Eds.; Wydawnictwo Naukowe PWN: Warszawa, Poland, 2010; pp. 258–260.
5. UNESCO. *Incheon Declaration: Education 2030: Towards Inclusive and Equitable Quality Education and Lifelong Learning for All*; UNESCO: Paris, France, 2015.
6. Bazavlutskaya, L.M.; Evplova, E.V.; Konyaeva, E.A. Sustainable development goals in the field of education: Features and challenges of implementation. *Rus. J. Educ. Psychol.* **2018**, *9*, 6.
7. ISO. Goal 4: Quality Education Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for All. Available online: https://www.iso.org/sdg/SDG04.html (accessed on 15 February 2020).
8. The World Bank. The World Bank Annual Report 2019: Ending Poverty, Investing in Opportunity. Available online: http://documents.worldbank.org/curated/pt/221591570465241330/pdf/The-World-Bank-Annual-Report-2019-Ending-Poverty-Investing-in-Opportunity.pdf (accessed on 15 February 2020).
9. Cebrián, G.; Junyent, M. Competencies in education for sustainable development: Exploring the student teachers' views. *Sustainability* **2015**, *7*, 2768–2786. [CrossRef]
10. Aleksejeva, L. Country's competitiveness and sustainability: Higher education impact. *J. Secur. Sustain. Issues* **2016**, *5*, 355–363. [CrossRef]

11. Tsindeliani, I.A. The Russian System of Financial Law. *Mediterr. J. Soc. Sci.* **2015**, *6*, 47–58.
12. Osher, D.; Cantor, P.; Berg, J.; Steyer, L.; Rose, T. Drivers of human development: How relationships and context shape learning and development. *Appl. Dev. Sci.* **2018**, *24*, 6–36. [CrossRef]
13. Iurato, Q.; Khrennikov, A.Y. Entropy, externality and human evolution. *BioSystems* **2020**, *191–192*, 104130. [CrossRef]
14. Androniceanu, A. Social responsibility, an essential strategic option for a sustainable development in the field of bio-economy. *Amfiteatru Econ.* **2019**, *21*, 347–364. [CrossRef]
15. Starshinova, A.V. Contradictions of students' motivation for participation in the activities of voluntary organisations. *Educ. Sci. J.* **2019**, *21*, 143–166. (In Russian) [CrossRef]
16. Figueiredo, H.; Biscaia, R.; Rocha, V.; Teixeira, P. Should we Start Worrying? Mass Higher Education, Skill demand and the Increasingly Complex Landscape of Young Graduates' Employment. *Stud. High. Educ.* **2017**, *42*, 1401–1420. [CrossRef]
17. Garanina, Z.G.; Balyaev, S.I.; Ionova, M.S. The Role of Self-Attitude in the Personal and Professional Development of High School Students. *Educ. Sci. J.* **2019**, *21*, 82–96. (In Russian) [CrossRef]
18. Mura, L.; Ključnikov, A.; Tvaronavičienė, M.; Androniceanu, A. Development trends in human resource management in small and medium enterprises in the Visegrad Group. *Acta Polytech. Hung.* **2017**, *14*, 105–122.
19. Humbatova, S.I.; Hajiyev, N.G.-O. The role of spending on education and science in sustainable development. *Entrep. Sustain. Issues* **2019**, *7*, 1704–1727. [CrossRef]
20. Fedorov, V.A.; Chedov, K.V. The Actualisation of Regional Capacity Educational Space Based on Cluster Interaction: The Aspect of Formation of Training Health Culture. *Educ. Sci. J.* **2019**, *21*, 186–220. (In Russian) [CrossRef]
21. Yang, Y.; Fabus, M.; Bae, K.-H.; Zhang, M. A diamond model based analysis for improving the sustainable competitiveness in educational exports by Chinese colleges and universities. *Entrep. Sustain. Issues* **2020**, *7*, 1858–1871. [CrossRef]
22. Shurygin, V.Y.; Sabirova, F.M. Particularities of blended learning implementation in teaching physics by means of LMS Moodle. *Rev. Espac.* **2017**, *38*, 39.
23. Klees, S.J. Will We Achieve Education for All and the Education Sustainable Development Goal? *Comp. Educ. Rev.* **2017**, *61*, 425–440. [CrossRef]
24. Tokareva, E.A.; Malysheva, O.G.; Smirnova, Y.V. Prospects of the liberal arts educational model in the national history study. *Opcion* **2019**, *35*, 11–29.
25. Stock, T.; Kohl, H. Perspectives for international engineering education: Sustainable-oriented and transnational teaching and learning. *Procedia Manuf.* **2018**, *21*, 10–17. [CrossRef]
26. Sinaga, O.; Lis, M.; Razimi, M.S.A. Education and core skills in the performance with mediating role of employee innovation. *Pol. J. Manag. Stud.* **2019**, *19*, 363–373.
27. Annan-Diab, F.; Molinari, C. Interdisciplinarity: Practical approach to advancing education for sustainability and for the Sustainable Development Goals. *Int. J. Manag. Educ.* **2017**, *15*, 73–83. [CrossRef]
28. Rieckmann, M. *Education for Sustainable Development Goals: Learning Objectives*; UNESCO Publishing: Paris, France, 2017.
29. Laland, K.N.; Odling-Smee, F.J.; Feldman, M.W. Niche construction, biological evolution, and cultural change. *Behav. Brain Sci.* **2000**, *23*, 131–175. [CrossRef] [PubMed]
30. Muller, G.B. Why an extended evolutionary synthesis is necessary. *Interface Focus* **2017**, *7*, 20170015. [CrossRef] [PubMed]
31. Laland, K.N.; O'Brien, M.J. Cultural Niche Construction: An Introduction. *Biol. Theory* **2011**, *6*, 191–202. [CrossRef]
32. Griffiths, P.; Stotz, K. Developmental Systems Theory as a Process Theory. In *Everything Flows: Towards a Processual Philosophy of Biology*; Nicholson, D.J., Dupre, J., Eds.; Oxford University Press: Oxford, UK, 2018; pp. 225–245.
33. Šafránková, J.M.; Šikýř, M. Sustainable development of the professional competencies of university students: Comparison of two selected cases from the Czech Republic. *J. Secur. Sustain. Issues* **2017**, *7*, 321–333. [CrossRef]
34. Frankowska, A.; Głowacka-Toba, A.; Rasińska, R.; Prussak, E. Students entering the labour market, their hopes, expectations and opportunities in the context of sustainable economic development. *J. Intern. Stud.* **2015**, *8*, 209–222.

35. Leicht, A.; Heiss, J.; Byun, W.J. *Issues and Trends in Education for Sustainable Development*; UNESCO Publishing: Paris, France, 2018; Volume 5.
36. Onah, D.F.O.; Sinclair, J.E. A Multi-dimensional Investigation of Selfregulated Learning in a Blended Classroom Context: A Case Study on eLDa MOOC. In Proceedings of the Advances in Intelligent Systems and Computing, Cairo, Egypt, 9–11 September 2017; pp. 63–85.
37. Marquez-Barja, J.M.; Jourjon, G.; Mikroyannidis, A.; Tranoris, C.; Domingue, J.; DaSilva, L.A. FORGE: Enhancing elearning and research in ICT through remote experimentation. In Proceedings of the Global Engineering Education Conferences, Istanbul, Turkey, 3–5 April 2014; pp. 1157–1163.
38. Alario-Hoyos, C.; Estévez-Ayres, I.; Sanagustín, M.P.; Leony, D.; Kloos, C.D. MyLearningMentor: A Mobile App to Support Learners Participating in MOOCs. *J. Univ. Comput. Sci.* **2015**, *21*, 735–753.
39. Thirouard, M.; Bernaert, O.; Dhorne, L.; Bianchi, S.; Pidol, L.; Petit, Y. Learning by doing: Integrating a serious game in a MOOC to promote new skills. In Proceedings of the 2nd MOOC European Stakeholders Summit, EMOOCs, Lausanne, Switzerland, 10–12 February 2014; pp. 92–96.
40. Fahmy, A.; Chatti, M.; Narek, D.; Hendrik, T.; Ulrik, S. Video-Mapper A video Annotation tool to support collaborative learning. In Proceedings of the. 3rd EMOOCs, Mons, Belgium, 18–20 May 2015; pp. 131–140.
41. Davis, D.; Chen, G.; Jivet, I.; Hauff, C.; Houben, G. Encouraging Metacognition & Self-Regulation in MOOCs through Increased Learner Feedback. In Proceedings of the CEUR Workshop, LAK'16, Edinburgh, UK, 25 April 2016; pp. 17–22.
42. Pérez-Álvarez, R.; Maldonado-Mahauad, J. Design of a tool to support self-regulated learning strategies in MOOCs. *J. Univ. Comput. Sci.* **2018**, *24*, 1090–1109.